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WORK DIMENSIONS DERIVED THROUGH SYSTEMATIC JOB ANALYSIS OF THE GENERAL WORK INVENTORY

by

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Table 2. General Work Inventory Survey Sample by Full Air Force Specialty Code Except Skill Level.

Describing the world of work is becoming more and more complex with technological growth continuously redefining the work domain. From an economic standpoint, Prien and Ronan (1971) defined work as: (a) a purposeful activity, (b) instrumental in goal achievement, (c) income yielding, (d) an expenditure of effort, and (e) a response to obligation. Additionally, Ballentine and Cunningham (1981) described work as "a process whereby one exerts effort to transform various inputs into prescribed outcomes"(p.1).

Job analysis offers a means of studying the world of work. As defined by McCormick (1979), "job analysis is the process of obtaining information about jobs"(p. 20). Job analysis programs can be described as conventional (qualitative) or structured (quantitative) (McCormick ,1979). Conventional methods involve collecting job related information by observing or interviewing job incumbents, resulting in job descriptions in written or essay form. Structured job analysis is a more systematic and scientific approach aimed at developing procedures to identify and/or measure units of job-related information. Ballentine and Cunningham (1981) stated the conventional approach subjectively describes specific jobs, but the information is not generalizable. Conversely, the structured approach involves the objective and systematic analysis of the relations between work units, such as positions, jobs, or occupations. More specifically, task and duty similarity analysis between positions and jobs is conducted within the same organization, while work element and work dimension similarity between jobs and occupations is done typically across organizations.

In regard to the structured approach to job analysis, Cunningham (1971) coined the term "ergometrics." He defines ergometrics as "the application of psychometric principles and procedures to the study of human work"(p. 7). This approach, according to Cunningham responds to four problems: (1) the definition, quantification, and classification of work variables, (2) the establishment of relationships between work variables and existing measures of human attributes (i.e., tests in the cognitive, psychomotor, and affective domains), (3) the development of measures of work-related human attributes, or behavioral potentials (such as vocational ability tests and interest scales), and (4) the study

of the nature of the relationships among various work-related variables. From these four statements ergometrics can be seen as "emphasizing the common dimensions rather than the unique characteristics of jobs"(p. 8).

The importance of deriving job dimensions in job analysis has been cited throughout the literature. Chalupsky (1962) suggested that "selection of workers, as well as promotion and transfer and the development of career guidance programs, would be facilitated if common denominators underlying individual job elements could be identified and used as the basis for job classification"(p. 62). Palmer and McCormick (1961) hypothesized that it is "reasonable to believe that there might be certain basic dimensions of work activity which conceivably could be identified and described"(p. 289). McCormick, Cunningham, and Gordon (1967) stated that to adequately quantify and categorize work variables, "it seems necessary to be able to characterize human work activities and work situations in terms of possible common denominators, expressed either in quantitative form or in terms of meaningful nominal classes or categories"(p. 417). Riccobono and Cunningham (1971a) stated, in regard to occupational clustering, "there is a need for a comprehensive set of work variables, or dimensions, which could be applied to the description and classification of occupations for educational purposes"(p. 1). Finally, McCormick et al. (1967) suggested that such common denominators or dimensions would improve personnel decisions, such as selection and placement, training, job evaluation, job satisfaction and motivation, and job design.

For purposes of this proposal, work dimensions, as defined by Ballentine and Cunningham (1981), are "statistically derived constructs representing work elements which commonly occur together in positions/jobs"(p. 1). Additionally, work elements are defined as "descriptions of various kinds of work activities or conditions on which positions or jobs can be rated"(p. 1).

The proposed research was designed to derive basic work dimensions from the elements in a structured job analysis questionnaire, the General Work Inventory (Cunningham and Ballentine, 1982).

REVIEW OF PREVIOUS RESEARCH

Extensive job analytic research has been carried out to identify and classify characteristics of jobs. Some of this research has been aimed at identification of work dimensions underlying job characteristics.

In a review of the research literature, Riccobono and Cunningham (1971a) grouped research on deriving work dimensions into four categories: (1) an a priori basis, (2) a basis of similarity judgments of jobs, (3) a basis of ratings of human attribute requirements of jobs (e.g., aptitudes, abilities, and interests), and (4) a basis of ratings of jobs on work activity and condition statements. While all of these categories contain valuable information about the derivation of work dimensions, this review will concentrate on research where work dimensions were derived from ratings of jobs on work activities and condition statements. However, a brief reference to contributions made in the other three areas listed above deserves mentioning.

A Priori Work Dimensions

Riccobono and Cunningham (1971a) reviewed several research efforts under this reading. First, Studdiford (1951) suggested a classification scheme for grouping jobs that are alike with respect to fundamental work activities and worker requirements. This work was done under the Functional Occupational Classification Project. Second, Fine (1955) and Fine and Heinz (1958), working under the Occupational Classification Research Project of the United States Employment Service (USES), used a functional job analysis system to derive work dimensions in terms of worker functions, materials, products, subject matter, and methods groups. This work led to the USES Dictionary of Occupational Titles worker function categories. Another study under this category was Roe's (1954) scheme of classifying jobs into groups according to their primary focus of activity (i.e., Physical or Mathematics) and into levels according to the type of function performed (i.e., Innovation and Independent Responsibility). Finally, Holland's work (1959) resulted in a two-dimensional (Occupational Environments and Occupational Choice) classification system for classifying occupations based on a theory of personality types. It should be noted that studies in this section involved qualitative approaches to the study of jobs.

Work Dimensions Based On Similarity Judgments

In the area of overall similarity judgments of jobs, two studies can be cited. In the first study, Gonyea (1961) identified 12 oblique first-order factors and 5 orthogonal second-order factors or dimensions underlying job perceptions. He used Case III of Andrew's A-technique, a method of non-serial matching. Because of difficulty subjects encountered in using the nonserial matching technique, Gonyea and Lunneborg (1963), in a subsequent study, used Case II of the A-technique, the methods of triads. Their results yielded 5 significant factors which corresponded directly to Gonyea's (1961) 5 second-order factors.

Work Dimensions Based On Human Attribute Requirements

The third category of deriving work dimensions can be illustrated by several studies spanning over two decades. First, Jaspen (1949) identified 6 dimensions through factor analysis of the ratings of 275 occupations. The occupations were rated on 45 worker traits in the Worker Characteristics Form. Only 20 of the trait ratings were used in the analysis. Next, McCormick, Finn, and Scheips (1957) derived seven factors from factor analyzing 44 human attribute variables on which 4,000 jobs had been rated. Factor scores for these jobs were used to construct 192 patterns of factor scores.

Riccobono and Cunningham (1971a) described two studies in this category involved with research using Air Force jobs. In the first study, Norris (1956) rated 150 Air Force job descriptions on 170 human traits. His analysis yielded 18 relatively independent dimensions. In a second study, Thorndike, Hagen , Orr, and Tosner (1957) used the Job Activities Blank which represented 14 trait dimensions form Norris' (1956) study. The Job Activities Blank was administered to 963 men in 25 Air Force jobs. A factor analysis yielded 8 orthogonal factors.

Two final studies should be mentioned. Mecham and McCormick (1969) had a group of psychologists and graduate students rate the relevance of 68 human attributes (aptitudes, temperaments, and interests) to the 178 Position Analysis Questionnaire (PAQ) items. Attribute requirement profiles were then obtained for each questionnaire item. A factor analysis of these profiles resulted in 21 factors, or dimensions. In a similar study, Neeb, Cunningham, and Pass (1971) collected 102 attribute readings on the 622 items in the Occupation Analysis Inventory

(OAI). Attribute requirement weights for each OAI item were obtained and factor analyzed. In all, 67 first-order and 21 higher-order factors were obtained.

Work Dimensions Based On Work Activity And Condition Statements

The following review deals with the main emphasis of this research. The work dimensions derived from work activity or condition statements can be of two types: (1) dimensions that are applicable to restricted ranges of jobs, and (2) dimensions that are applicable to jobs or occupations across the entire work domain. (Cunningham, 1971). The research review will be broken up into those two categories.

Work Dimensions Applicable To Specific Jobs Or Occupations

Studies deriving work dimensions applicable to specific jobs or occupations can be divided into supervisory and non-supervisory areas.

Supervisory Work Dimensions

Creager and Harding (1958) stated the main intent of factor analysis of supervisory behaviors was to "develop techniques for evaluating supervisory behavior"(p. 197). They also cautioned that supervisory ratings may be clouded by "halo" effects and a factor analysis method that can separate "halo" from pertinent behavior dimensions needs to be used. The model they used was a hierarchical model proposed by Schmid and Leiman. In their study, the investigators applied this hierarchical model to the analysis of intercorrelations from a checklist designed to measure six aspects of foreman behavior: (1) Human Relations, (2) Job Instruction, (3) Planning and Control, (4) Policy and Procedure, (5) Technical Job Knowledge, and (6) Personal Characteristics. One hundred and forty-one foremen were rated by their supervisors using the Foreman Checklist. These foremen represented 23 companies. The checklist contained 81 statements related to the six previously mentioned foremen behaviors. The supervisors rated each of the 81 statements on how well it described the performance of the foreman being rated. For the factor analysis, the 81 statements were divided into 18 variables (three for each of the six aspects of foreman behaviors) made up of four or five statements. Pearson product-moment correlations were computed for the 18 variables. The resulting correlation matrix was subjected to the hierarchical factor model. The analysis

produced 4 factors: (1) a general or "halo" factor, (2) a Social Relations factor, (3) a Technical Job Knowledge factor, and (4) an Administrative Skills factor. Creager and Harding concluded that the hierarchical factor model is a useful technique for the analysis of intercorrelations of trait ratings.

In regard to basic dimensions of executive positions, Hemphill (1959) described a research project undertaken by the Educational Testing Service (ETS). The Executive Position Description Questionnaire (EPDQ), containing 575 elements, was developed for this study. The elements were organized into four parts: (1) Position Activities, (2) Position Responsibilities, (3) Position Demands and Restrictions, and (4) Position Characteristics. Ninety-three executives from five companies were asked to rate each of the 575 elements as to the extent the element was part of his or her job. The data were analyzed by Tucker's inverse inter-battery factor analysis. The ten dimensions resulting from the analysis were : (1) Staff Service, (2) Supervision of Work, (3) Internal Business Control, (4) Technical Aspects of Products and Markets, (5) Human, Community, and Social Affairs, (6) Long-Range Planning, (7) Exercise of Broad Power and Authority, (8) Business Reputation, (9) Personal Demands, and (10) Preservation of Assets. Areas of application for these results as suggested by Hemphill are: (1) Organizational Analysis, (2) Job Rotation, (3) Performance Appraisal, and (4) Salary Administration. Hemphill concluded by stating the usefulness in the EPDQ is in "its power to replace guesswork with dependable information on the general characteristics of executive work"(p. 66).

In another study, Brumback and Vincent (1970) conducted a factor analysis of work performed by administrative, professional, and scientific officers in the United States Public Health Service. The results of the study were to be used to develop a new officer performance rating instrument with rating scales applicable to the kind of work actually being performed by the officers. Data were collected by administration of the Position Inventory, which contained 196 duty descriptions. Respondents were asked to rate, on a seven-point scale, a duty's significance as part of his or her position. The sample contained 3719 Public Health Service officers. Responses on the items were correlated using the Pearson product-moment correlation, and the resulting matrix was factor analyzed by the principal components solution (Harman, 1960). Twenty-six

factors were extracted from the analysis. Brumback and Vincent concluded that the factor analysis allowed for the reduction of what were "jumbled arrays of bits and pieces of occupational data"(p. 109).

In another study, Prien (1963) set out to develop criterion dimensions for first-line supervisory positions using the Supervisor Position Description Questionnaire (SPDQ). Data were collected from 24 factory foremen and their corresponding supervising executives. An inverse interbattery factor analysis extracted 7 factors: (1) Manufacturing Process Supervision, (2) Manufacturing Process Administration, (3) Employee Contact and Communication, (4) Work Organization, (5) Planning, (6) Preparation, and (7) Union Management Relations. In a second factor analysis, a centroid factor analysis was applied to factor scores of the 48 respondents. This analysis resulted in two factors: (1) Manufacturing Operations Management and Administration, and (2) Manpower Management and Utilization. Comparison of results to a study by Hemphill (1961) revealed considerable similarity. Prien concluded from his study the results "provide support for the development of procedures to describe position functions of an intangible nature"(p. 14).

Tornow and Pinto (1976) developed the Management Position Description Questionnaire (MPDQ), which was similar to Hemphill's (1961) EPDQ. The MPDQ was developed to describe the job content of executives and management positions in terms of their responsibilities, concerns, restrictions, and demands. The 208 item MPDQ was administered to 433 managers from 6 companies covering 3 management levels. A principal component factor analysis yielded factor structures of 7, 10, and 13 factors. After rotation, the 13-factor solution was chosen. The investigators used the information to compare and group the 433 positions into 10 homogeneous clusters. They concluded that the 13 factors provided a "behaviorally meaningful taxonomy for describing, comparing, classifying, and evaluating managerial jobs in terms of their content"(p. 418).

In an analysis procedure similar to Tornow and Pinto's (1976), Dowell and Wexley (1978) conducted a study of first-line supervisors. Two hundred and fifty-one supervisors from 40 plants were administered the Supervisor Task Description Questionnaire (STDQ) which included 100 work activities. The

investigators extracted 7 factors in their analysis: (1) Working with Subordinates, (2) Organizing Work of Subordinates, (3) Work Planning and Scheduling, (4) Maintaining Efficient/Quality Production, (5) Maintaining Safe/Clean Work Areas, (6) Maintaining Equipment and Machinery, and (7) Compiling Records and Reports. A comparison was also made of the 251 positions according to production technology and function supervised on the importance and relative amount of time spent on each work dimension. This analysis showed few differences in the jobs of first-line supervisors regardless of technology or function. Comparisons with these factors and factors obtained for first-line supervisors by Prien (1963) showed some similarities. Conversely, differences were found in these factors and the factors developed by Tornow and Pinto (1976) for upper level managers. Such results indirectly validated Dowell and Wexley's factor structure.

Finally, Hauenstein (1985) conducted a factor analysis to identify underlying work dimensions of top and middle managers of the North Carolina State government. This information was to be used in an overall managerial training needs analysis. The investigator developed the 392 item Public Manager Position Description Questionnaire (PMPDQ) to obtain data on these middle and top management positions. The sample contained 1815 middle managers and 354 top managers from 18 state government agencies who completed the PMPDQ describing their jobs. Eight separate factor analyses, based on the 2169 position ratings, were performed on six of the work element sections: (1) Organizing, (2) Staffing, (3) Directing, (4) Controlling, (5) Representing, and (6) the combined sections of Situational and Decision-Making. Another section analyzed contained all the remaining PMPDQ items. A principal component factor analysis followed by a rotation to non-adjusted varimax solutions was conducted for intercorrelation matrices for each of the above sections.

In an analysis of factorial invariance, the investigator divided the sample into two comparable subsamples and conducted the same eight factor analyses on each subsample as was done on the total sample. Next, within the eight sections, each factor from the total sample was matched to its closest counterpart in the two subsamples, and coefficients of congruence were computed between

the two subsample factors to get a factor's stability estimate. Overall, a total of 70 factors were rotated in the eight analyses, and 61 factors had congruence coefficients equal to or greater than .75. These 61 factors were retained for further analysis.

Judging these 61 factors to be too numerous and specific, the investigator decided to conduct an overall factor analysis of the PMPDQ items. Prior to the analysis, five subject matter specialists examined the 391 PMPDQ items for management effectiveness. Of the 391 PMPDQ items, 268 were retained. The 268 items were subjected to the same total and subsample analyses described above. These analyses yielded a 12-factor solution. Nine of the factors had congruence coefficients equal to or greater than .75. Next, the investigator consolidated the results of the sectional and general component analyses to select a final set of factors to represent managerial functions. In all 14 sectional and 8 general factors were retained to represent management functions most relevant to a centralized training program.

Non-Supervisory Work Dimensions

Cornelius, Hakel, and Sackett (1979) set out to determine the similarities of enlisted jobs in a military setting (Coast Guard). The information was to be used to group jobs for appraisal purposes. The study involved revising the Position Analysis Questionnaire (PAQ) (McCormick, Jeanneret, and Mecham, 1969) to make the items applicable to this particular study. The PAQ scales were standardized to a relative time spent scale. The revised questionnaire contained 153 worker oriented items, and was administered to 3160 enlisted Coast Guard personnel. In all 2023 respondents representing 18 jobs and 5 ranks were used in the study.

The investigators used Tucker's three mode factor analysis. The modes were: (1) Mode 1 (153 levels representing the questionnaire items), (2) Mode 2 (18 levels representing types of jobs), and (3) Mode 3 (5 levels representing enlisted ranks). The rank mode was analyzed by factoring 2754 (18x133) observations on 5 variables. The two factors that emerged were Chief Petty Officer and Petty Officer. Through a similar procedure, the job mode analysis extracted 5 factors: (1) Aviation, (2) Service and Clerical, (3) Electronics, (4) Engineering, and (5) Deck Watch. Additionally, the elements mode analysis

yielded 7 factors: (1) Machine Tending, (2) Managing, (3) Cooking, (4) Machine Repair, (5) Clerical and Contact with Others, (6) Boating , and (7) Air Crew. The investigators suggested that output from these three analyses could be used to identify combinations of jobs and ranks for which separate appraisal systems could be developed.

Another study of non-supervisory work dimension development was conducted by Chalupsky (1962). The purpose of the study was to explore the factors underlying worker functions and knowledge requirements for a sample of clerical jobs. Also, Chalupsky wanted to assess the potential utility of developing and factor analyzing experimental checklists as a basis for identifying common denominators among jobs. A 33-item checklist was developed to characterize worker functions. Another 58-item checklist was developed to highlight knowledge components of clerical jobs. From the "Clerical and Kindred Occupations" groups of the DOT, 192 jobs were chosen that had job schedules available from the United States Employment Service (USES). Eleven trained graduate students in industrial psychology analyzed a group of job schedules using both checklists. Differences in item analyses between the two checklists for each job were reconciled to allow for a single checklist of items for each job. A correlation matrix was computed for item correlations for each checklist. The two intercorrelation matrices were subject to a principal component method factor analysis, followed by an orthogonal rotation of the factors. Six interpretable factors emerged from the checklist of knowledge, and 5 factors were interpretable for the checklist of clerical functions. Four of the factors from each checklist were judged to be in common. They were: (1) Inventory and Stockkeeping, (2) Supervision, (3) Computation and Bookkeeping, and (4) Communications and Public Relations. The investigator concluded from his analysis that the factors that emerged from the analysis represent meaningful dimensions of clerical activity as typified by the jobs studied. He based this conclusion on the similarity in the two factor structures obtained, and on the similarity of his factor structures to the 8-factor structure of clerical jobs obtained by Thomas (1952).

Work Dimensions Applicable To Jobs In General

The need for deriving work dimensions applicable to jobs in general has been expressed by several researchers (Palmer et al., 1961; McCormick et al.,

1967; McCormick et al., 1972; and Riccobono and Cunningham, 1971a). The following paragraphs will review some research in this area.

Prior to discussing these studies, a distinction should be made in regard to two types of work activity as described by McCormick (1979) and Palmer et al. (1961). These two work activities are job-oriented activities and worker-oriented activities. Job-oriented activities are the technological aspects of jobs that describe what is accomplished by a worker, such as painting, cleaning, or cutting. Worker-oriented activities, on the other hand, are behaviors performed in work. They are what workers do in performing their jobs, such as sensing, decision making, performing physical actions, or communicating. As can be seen by these definitions, worker-oriented activities could occur across many occupations, while job-oriented activities are usually occupation or job specific.

In a preliminary study, Palmer et al. (1961) set out to use a worker-oriented activity checklist to identify worker activity dimensions in jobs. The 177 checklist items were organized under 7 categories: (1) Information Receiving Activities, (2) Mental Activities, (3) Supervisory and Communication Activities, (4) Manual Activities, (5) General Body Activities, (6) General Work Conditions, and (7) General Job Characteristics. The sample contained 250 jobs from a large steel producing firm. The jobs were rated using the instrument previously mentioned. Two factor analyses were performed. The first analysis involved factor analyzing the correlations of checklist variables within each of the first 5 categories listed above. This analysis yielded 14 factors. Factor scores were intercorrelated, and a second factor analysis was performed on the resulting 28x28 matrix. The second factor analysis produced 4 factors: (1) General Decision Making and Mental Activity, (2) Sedentary vs Physical Work Activity, (3) Communications in Business Management vs Information in Routine Physical Work, and (4) Knowledge of Tools vs Mathematics. The investigators concluded the "results tend to support the view that work activities can be identified or measured and the the variety of human work activities may be organized with greater simplicity and economy in terms of a smaller number of relatively independent dimensions" (p. 294).

Encouraged by the results of the Palmer et al. (1961) study, McCormick et al. (1967) developed the Worker Activity Profile (WAP) to explore the structure of

jobs in terms of worker-oriented variables. The WAP contained 162 worker-oriented job elements. The WAP was used to analyze 2 samples of jobs in two separate studies (Gordon and McCormick, 1963; Cunningham and McCormick, 1964) as summarized by McCormick et al. (1967). The first study had a sample consisting of 400 jobs representing proportions of jobs in major occupational categories of the DOT. The other study consisted of a sample of jobs (400) representing proportions of people in the occupational groups of the DOT. In both studies, 6 factor analyses were carried out. One of these included all 119 WAP items, and the other analyses were based on item subgroups: (1) Mediation Activities, (2) Physical Output Activities, (3) Communications Activities, (4) Situational Activities, (5) Environmental Aspects. To determine factor stability, the factors from the two separate analyses were compared using Tucker's (Harman, 1960; Gorsuch, 1974) coefficient of congruence procedure. The comparisons showed considerable correspondence between the two independently derived factor structures. From these results, the investigators concluded that "the results of the studies indicate quite strongly that there is substantial 'structure' in the domain of human work as one looks at human work in terms of human behaviors and contextual and environmental attributes of work situations"(p. 430). However, the investigators cautioned that the factors derived from these analyses should be considered tentative, and further investigation required.

Subsequent to the research conducted with the WAP, McCormick et al. (1972) conducted a series of studies involving the Position Analysis Questionnaire (PAQ) they developed. The researchers considered this 189 worker-oriented item questionnaire an improvement over the WAP both in the rating scales and in checklist items. The PAQ items were organized into six categories: (1) Information Input, (2) Mediation Processes, (3) Work Output, (4) Interpersonal Activities, (5) Work Situation and Job Context, and (6) Miscellaneous Aspects. Job analysts from 70 business and industrial organizations rated a total of 536 jobs on the PAQ. Seven principal component factor analyses with varimax rotations were conducted; one overall factor analysis of 150 PAQ items and six separate analyses of items within the major PAQ divisions. The overall analysis produced 5 factors: (1)

Decision/Communication/Social Responsibilities, (2) Skilled Activities, (3) Physical Activities/Related Environmental Condition, (4) Equipment/Vehicle Operation, and (5) Information Processing Activities. Twenty-seven factors emerged from the six component analyses. Factor stability was demonstrated by splitting the 536 jobs into two subsamples of 268 jobs each. The overall factor analysis of the 150 items was repeated for the subsamples and the resulting factors compared using Tucker's (Harmon, 1960; Gorsuch, 1974) coefficient of congruence procedure. The results showed the factors to be highly congruent. After subjective comparison of the work dimensions derived from factor analysis of the WAP and PAQ, the investigators found that 23 of the 31 dimensions from the WAP bear some resemblance to the 32 dimensions found in the PAQ analyses. The investigators concluded that the "results lend further support to the thesis that it is possible to analyze human work in terms of meaningful 'units' or job elements of worker-oriented nature, and that this analysis can be carried out with acceptable reliability"(p. 367).

With the favorable results of the factor analyses of the PAQ, Cunningham and associates (Cunningham, Tuttle, Floyd, and Bates, 1971; Riccobono and Cunningham, 1971a and 1971b; and Boese and Cunningham, 1975) conducted another series of studies deriving work dimensions applicable to jobs in general. Cunningham and his associates set out to use McCormick's job component analysis procedures to develop a taxonomic system relevant to occupational education and guidance, with emphasis on occupational exploration. (Cunningham et al. , 1971).

The first phase of this effort was the development of the Occupation Analysis Inventory (OAI; Cunningham et al. , 1971). The OAI was a inventory designed to be used in "describing, comparing, and grouping jobs and occupations for educational purposes"(p. 2). The OAI items were written to represent the different components of an information-processing paradigm: (1) Information Input, (2) Mental Activities, (3) Behavior, (4) Outcome. Pointing out the differences between the PAQ and the OAI, Riccobono and Cunningham (1971a) explained the PAQ was designed primarily for application to problems of synthetic validity and job evaluation, while the OAI was intended mainly for curricular and guidance purposes. For this difference, then the OAI needed a

high level of descriptive specificity (or content loading), while still maintaining its applicability to the entire spectrum of occupations. Thus, the OAI items needed to consist of job-oriented and worker-oriented items. The 622 items of the OAI were grouped into 5 categories: (1) Information Received, (2) Mental Activities, (3) Work Behavior, (4) Work Goals, and (5) Work Context.

Following the OAI development, Riccobono et al. (1971a and 1971b) conducted two studies to derive work dimensions from the OAI items. In the first study, 400 jobs were selected in proportion to the numbers of jobs within the major occupational categories of the DOT. The raters, 12 USES job analysts and 2 graduate students, rated the jobs on the OAI items using USES job schedules. Pearson product-moment correlations were computed among the OAI elements on the basis of job ratings. An overall factor analysis could not be accomplished, since the total number of variables exceeded computer program limitations. Therefore, 7 separate analyses were conducted within the following OAI sections: (1) Information Received (2) Mental Activities, (3) Personal Work Behavior, (4) Representational Work Behavior, (5) Interpersonal Work Behavior, (6) Work Goals, and (7) Work Context. Only 445 OAI items were used in the factor analysis. The 177 items excluded from the factor analysis included all items in the Sensory Channel and Incentive sections of the OAI (containing 10 and 17 items respectively) , 5 open-ended items in the Physical Work Behavior section, and 145 items which did not meet the criteria of having reliability coefficients of .22 or greater and receiving a minimum spread of ratings. A principal component factor analysis was conducted with unities in the diagonal of the correlation matrices, followed by an oblique rotation of the factors. Cattell's "scree" test was used to determine the number of factors to rotate. Factor scores were then computed on each job for each set of rotated factors. These factor scores were used to help in interpreting the factors. The analysis yielded 77 out of 81 interpretable factors.

Considering these factors only tentative, Riccobono and Cunningham (1971b) set out to replicate their study, thereby showing factor stability. The sample of jobs for this analysis was drawn in proportion to the numbers of people employed within the major occupational groups defined by the U.S. Bureaus of Labor Standards. The same OAI item selection factor analysis procedures were

used in this study as in the previous study to allow for comparison of factors. There were 407 OAI items used in the analysis. Items were eliminated from the study for the same reasons as the previous study (i.e., items with insufficient variation and/or inadequate reliability, the open-ended items, and items in the Sensory Channel and Incentive sections of the OAI). The same separate sectional analyses as in the previous study were conducted for this study. The number of factors rotated in each section equaled the number of factors rotated in the sectional analyses of the previous study.

To test for factor stability of the OAI factors, the factors obtained from the previous study and this study were compared using Tucker's (Harmon, 1960; Gorsuch, 1974) coefficient of congruence procedure. Each rotated factor from a sectional analysis of this study was compared with every rotated factor obtained from the corresponding sectional analysis of the original job sample. Seventy-two percent of the 81 coefficients met or exceeded the .60 criterion value. The investigators stated the results were comparable to those obtained by McCormick et al. (1967) using the WAP. Overall, the authors concluded that the congruency analysis showed "some degree of stability in the factorial structures of the OAI derived from two job samples"(p. 71). However, they went on the say that the results left "something to be desired"(p. 71).

Under the assumption that a larger job sample would yield a more stable factor structure, the investigators next conducted a factor analysis on a combined sample of the two previous studies plus an additional 14 OAI-rated jobs. This combination resulted in a sample of 814 jobs. In all, 90 factors were extracted and rotated obliquely, resulting in 88 interpretable factors. Finally, a higher-order factor analysis was performed on the first-order factors from the combined sample analysis. Twenty-two meaningful higher-order factors resulted. These factors, in several cases, corresponded to the titles of a priori categories in the OAI as well as factors derived in an earlier study using attribute-requirement profiles of OAI items (Neeb, Cunningham, and Pass, 1971).

In a follow-up study, Boese and Cunningham (1975), believing that "a larger, more representative job sample would produce a more differentiated and stable set of OAI factors"(p. 4), added an additional 600 OAI-related jobs with OAI ratings to the 814 jobs previously analyzed. Eight separate sections of the OAI

were factor analyzed: (1) Information Received, (2) Mental Activities, (3) Physical Work Behavior, (4) General Physical Requirements, (5) Representational Work Behavior, (6) Interpersonal Work Behavior, (7) Work Goals, and (8) Work Context. The investigators used a principal axes procedure in factor analyzing the eight sectional intercorrelation matrices produced. The matrices were calculated using ones in the diagonal. Eigenvalues were extracted by the principal axes procedure. The eigenvalues were plotted and Cattell's (1966) "scree" test was used to determine the number of factors to rotate. The factors were then orthogonally rotated to a varimax criterion. Next the same analytic procedure was carried out with the two subsamples of 707 jobs as was applied to the total sample. To test for factor stability, Tucker's (Harman, 1960, Gorsuch, 1974) coefficient of congruence procedure was used to compare corresponding sectional factor matrices for the two subsamples.

A higher-order factor analysis was then conducted on the orthogonally rotated first-order factors in order to merge all eight sections of the OAI into one set of general work dimensions. This higher-order analysis was conducted on the total sample of 1414 jobs and on the two subsamples of 707 jobs. A congruency analysis, similar to the one applied to the first-order factors was conducted on the higher-order factors. Three matrices of congruency coefficients were computed: (1) one between Subsamples A and B, (2) one between Subsample A and the total sample, and (3) one between Subsample B and the total sample. Commonly matched subsample factor coefficients served as stability estimates for linking factors in the total sample.

The analyses yielded 132 first-order factors, only 5 of which were uninterpretable. Also, 28 general, higher-order factors were extracted, only 4 of which were uninterpretable. Eighty percent of the orthogonally rotated first-order OAI factors had congruence coefficients greater than or equal to .60. The authors concluded the congruency analyses indicated some degree of stability and were an improvement over earlier factor studies of the OAI. The investigators stated that the OAI dimensions might be applied to such areas as "occupational taxonomy development, vocational/technical education program analysis, and occupationally related test development"(p. iv).

In a final study related to the OAI, Parry-Hill (1985) set out to develop a valid

shorter form of the OAI that would require less time to administer and that would capture the same job information as the longer OAI form (Cunningham et al., 1971). A trained job analyst requires an average of two and one-half to three hours to rate a job on the long OAI form (Riccobono et al., 1971b). In his study, Parry-Hill (1985) constructed a short form (229 items) of the OAI(OAI:SF) based on the 88 interpreted first-order factors (dimensions) from the factor analysis of 814 OAI long form job ratings (Riccobono et al., 1971b). Additionally, the investigator developed a revised short form of the OAI (OAI:SFR) based on the 132 first-order factors from factor analysis of 1414 OAI long form job ratings (Boese et al., 1975).

The investigator used only the OAI:SFR form to derive work dimensions based on factor analysis. Therefore, emphasis in the review will be placed on the research conducted with the OAI:SFR. Some results from the research of the OAI:SF should be noted , however, since the two OAI short forms were very similar in content. In an inter-rater reliability analysis, the investigator found that 84 percent of the OAI:SF items had reliabilities of .70 or greater. This finding was comparable with reliability results using OAI ratings (Riccobono et al., 1971a; Boese et al., 1975). In regard to validity, the OAI:SF was found to cover 61 percent of the OAI first-order factors and 94 percent of the OAI attribute-requirement estimates. Also the OAI:SF was shown to do as well as the OAI in predicting human ability requirements of jobs as reflected by the mean General Aptitude Test Battery scores.

As previously stated, the 246 item OAI:SFR was developed from the 132 orthogonal first-order factors that were derived from factor analysis of the OAI ratings on 1414 jobs. (Boese et al., 1975). More specifically, the OAI:SF item were revised to reflect the 42 additional first-order factors derived from factor analysis of the 1414 jobs previously mentioned as compared to the factor analysis of the 814 OAI job ratings used to derive 90 first-order factors. (Riccobono et al., 1971b). In all, over 80 percent of the items in the OAI:SFR were identical to or only slightly reworded from OAI:SF items.

Six USES job analysts and one graduate assistant rated 204 jobs using the OAI:SFR. These jobs were selected to represent the work force distribution according to the US census. A large portion of the jobs selected also had USES

GATB group means available. Each of the jobs in the sample was rated by two analysts.

In the reliability analysis Parry-Hill (1985) computed inter-rater reliability coefficients for the OAI:SFR items using an analysis of variance procedure (Winer, 1962). Unadjusted coefficients for mean ratings were used to represent the reliability index. This reliability coefficient can be interpreted as "the approximate correlation which would be obtained if the mean ratings of this study were correlated with the mean ratings obtained in another study using a new sample of raters"(p. 47-48). Overall, 44 percent of the OAI:SFR items had inter-rater reliabilities of .70 or greater. This result compared forvorably with the OAI item reliability analysis (Riccobono et al. , 1971a) which showed only 30 percent of the items were found to have inter-rater reliabilities of .70 or greater. However, the reliability results from the OAI:SFR were not as favorable as the results from the OAI:SF reliability analysis. As previously stated 84 percent of the OAI:SF items has inter-rater reliabilities of .70 or greater, using the same reliability analysis procedure as was used for the OAI:SFR items. Parry-Hill (1985) suggested the lower reliabilities of the OAI:SFR items may be due to the previous training in job analysis that the OAI:SFR rater had received.

Preparatory to the factor analysis of the job ratings based on the OAI:SFR, several items were eliminated. Ratings on items with unadjusted mean rating reliability coefficients below .35 were eliminated from the factor analyses. With this criterion, 26 of the items were eliminated. Also, consistent with the factor analysis of the OAI (Boese et al., 1975), the OAI:SFR sections dealing with Sensory Channel and Educational and Experiential Requirements were excluded from the factor analysis. Two hundred seven OAI:SFR items were retained for factor analysis.

Ratings of 204 jobs on 207 OAI:SFR items were factor analyzed. The ratings were performed by 200 raters previously described. Three rater sets were used in the factor analysis. The 200 raters were divided into two separate groups (Rater1 and Rater2) and the third group consisted of all the 200 raters. Eight sectional factor analyses using the three groups were conducted. The sections of the OAI:SFR used in the analyses were: (1) Information Received, (2) Mental Activities, (3) General Physical Requirements, (4) Work Activities,

(5) Representational Work Behavior, (6) Interpersonal Work Behavior, (7) Work Goals, and (8) Work Context.

The factor analysis involved a principal axes method with unities in the diagonal of the correlation matrix. Factors with eigenvalues of 1.0 or greater were selected for rotation. These factors were rotated orthogonally to a varimax criterion. Next, the number of factors rotated was raised (+1 and +2) and lowered (-1 and-2). The interpretation of the factors was based on the factors' salient loadings and factor scores for the jobs in the sample. In all, 71 first-order factors were obtained from the combined sample factor analysis. All of these factors were interpretable.

To examine factor stability, the investigator compared the factors obtained from the two separate samples mentioned above. The same number of factors rotated in the combined sample were rotated in the the two separate samples. Tucker's coefficients of congruence (Gorsuch, 1974) were computed for the factor comparisons. A priori identification of matching factors was done by comparison of the factor loading matrices derived from the two groups of raters. Next, congruency scores of factors identified as matching were compared with congruency scores of factors identified as not matching. As predicted, there were substantial differences between the congruence coefficients of matched and nonmatched factors. The mean coefficient of congruence between factors indentified as matching was .805, while the mean of the coefficients between factors judged as non-matching was .153.

Next, the investigator obtained the distribution of the highest congruence scores for each of the 71 OAI:SFR first-order factors. This distribution was compared with a similar distribution of OAI congruency coefficients for first-order factors (Boese et al., 1975). The median congruence coefficient for the matched OAI:SFR factors was in the .80-.89 interval, and 90 percent of the coefficients for matched factors exceeded .60. In comparison, Boese and Cunningham (1975) obtained a median congruence coefficient in the .80 to .89 interval, and found that 80 percent of the coefficients for matched factors exceeded .60.

To condense the eight first-order factor sets into one set of general dimensions, the OAI:SFR ratings on 204 jobs from the combined sample were rescored using scoring coefficients for the 71 first-order factors. The

intercorrelation matrix was computed using these scores, and the same factor analysis procedures used in the earlier analyses were used for the higher-order factor analyses. To show higher-order factor structure stability each higher-order factor from the two separate samples was matched with its closest counterpart in the combined sample, and the coefficient of congruence was computed between the commonly matched factors from the two separate samples. Overall, 24 rotated higher-order factors accounting for 55.5 percent of the total variance were obtained. Twenty-three of these factors were interpretable.

From the results of the analyses of the OAI:SF and the OAI:SFR, Parry-Hill (1985) concluded that the findings supported the development of a shortened form of the OAI. More specifically, he concluded that: (1) the OAI:SF captured a substantial part of the original OAI information and (2) the factor structure of the OAI:SFR was meaningful and reasonably replicable. The investigator cautioned, however, that even though the results were encouraging, there was not enough evidence to use the short form as a complete alternative to the OAI. He made this conclusion because of the loss of some of the OAI first-order and higher-order factor information using the OAI short forms. Finally Parry-Hill (1985) suggested "additional research and development will be required to produce a valid and practical quantitative procedure for analyzing and grouping jobs for occupational exploration and guidance"(p. 111).

PURPOSE

The research conducted by Parry-Hill (1985) with the OAI:SF and and OAI:SFR supported the development of a shortened form of the OAI, based on OAI factors. However, Parry-Hill (1985) concluded from his study that the OAI:SF and OAI:SFR "should be considered as research tools only", and that "additional research and development will be required to produce a valid and practical quantitative procedure for analyzing and grouping jobs for occupational exploration and guidance purposes"(p. 111).

Based on Parry-Hill's (1985) research, Ballentine and Cunningham (1981) and Cunningham and Ballentine (1982) designed another short form of the OAI, the General Work Inventory (GWI). The GWI is a quantitative instrument for comparing work activities in different career fields to facilitate broad description, comparison, and classification of occupational information (Ballentine,1982). This information is to be used for occupational exploration and guidance. To date, Ballentine (1982) has collected job rating information and conducted a preliminary reliability analysis.

The proposed study is designed to derive a factor structure for the GWI elements and to determine the stability of that structure. Subject to time constraints, reliability estimates might be derived for the resultant GWI factors.

PROCEDURES

The following sections will describe the procedures used by Ballentine (1982) and those to be carried out in the proposed study: (1) GWI development, (2) Target population and survey sample, (3) Factor analyses, and (4) possible reliability analyses

General Work Inventory Development

Ballentine and Cunningham (1981) designed the General Work Inventory (GWI) mainly from 132 higher-order factors derived from factor analysis of the OAI (Boese et al., 1975). With permission of the authors, a copy of the GWI is reproduced in Appendix A. Like the OAI, the 266 GWI items cover both job- and worker-oriented activities common to the world of work. These types of activities were used to cover a high level of descriptive specificity, while still maintaining items applicable to the entire spectrum of occupations.

The GWI is divided into eight sections: (1) Sensory Requirements, (2) Information Elements, (3) General Mental Requirements, (4) General Physical Requirements, (5) Physical Activities, (6) Interpersonal Activities, (7) Work Conditions, and (8) Job Benefits/Opportunities.

Two sets of instructions are given for rating jobs on the GWI elements. First, respondents are to (1) check each element in Sections A thru F that is part of their job and then, (2) rate how much a part of the job each checked work element is on a scale of 1 (extremely small part of the job) to 9 (extremely large part of the job). Respondents are to do steps 1 and 2 for each section before going to the next section. Second, for Sections G and H, respondents are to, one section at a time, (1) check each element in these sections that occur in the job and then, (2) rate each checked element as to the extent of occurrence on a scale of 1 (extremely small extent) to 9 (extremely large extent).

Target Population And Survey Sample

During the Fall of 1982, Ballentine administered the GWI to United States Air Force (USAF) personnel. The target population for his study consisted of jobs performed by skilled enlisted personnel in the United States Air Force. Skilled personnel are personnel who have been trained to perform a certain job (specialty) and who have become proficient in that job. In the Air Force, enlisted

personnel are chosen to be trained in and assigned to a specialty based on a person-job match formula that considers the individual's strength and aptitude test performance in relation to the strength and aptitude requirements of the specialty. Also considered are the needs of the Air Force. In this study, "job" and "specialty" will be interchangeable.

Ballentine (1982) further explains the USAF specialty structure.

> The Air Force Military Personnel Classification System groups positions in which related work is performed into Air Force Specialties (AFS). Positions are grouped on similarity of functions and defined knowledge, education, training, experience, ability, and other criteria. These specialties are also combined into more general functional categories called career fields. The underlying principle of specialty formation is that positions included have similar work requirements and therefore require similar abilities.

The job sample was comprised of 2141 respondents who rated their jobs using the GWI. These respondents were from 175 Air Force specialties covering a broad range of job activities. All major Air Force career fields, except classified ones, were represented in the sample. Appendices B and C provide information on the career fields and specialties that were in the sample. Respondents were restricted to 5- or 7-skill levels in their specialty or job. The 5- and 7-skill levels designate incumbents who have been trained and gone through some apprenticeship program in a specialty, and have been working in that specialty for several years. The respondents also had to have been working in their present job for at least 60 days.

Factor Analyses

Several factor analyses will be conducted to examine the GWI's factor structure. The procedures used will be similar to those used in factor analyzing the OAI long and short forms (Riccobono and Cunningham, 1971a and b; Boese and Cunningham, 1975; and Parry-Hill, 1985).

The first factor analysis will be an overall analysis of the survey responses to the following GWI sections, by section letter designation: (B) Information Elements, (C) General Mental Requirements, (D) General Physical Requirements, (E) Physical Activities, (F) Interpersonal Activities, (G) Work Conditions, (H) Job Benefits/Opportunities. The following steps will be carried

out:

(1) A matrix of intercorrelations among the GWI items will be calculated with ones in the major diagonal.

(2) A principal components method will be applied to the correlation matrix and factors will be orthogonally rotated to a varimax criterion.

(3) Eigenvalues extracted by the principal components method will be plotted using Cattell's "scree" test. This will help determine how many components to rotate.

(4) Factors with eigenvalues greater than or equal to 1.0 will be retained for the first rotation.

(5) After examination of the eigenvalue plots, additional rotations will be performed, the results will be compared, and the most meaningful rotation will be retained.

(6) Mean factor scores will be computed for the 175 specialties listed in Appendix C. These scores will be used to help interpret the factors.

In addition, seven sectional factor analyses will be performed on the GWI elements. These analyses will correspond to the seven previously identified GWI sections. The same factor analytic procedures described for the overall analysis will be applied in the sectional analyses.

Finally, the sectional factor analyses will be followed by a higher-order factor analysis of the sectional factors. The resultant GWI higher-order factors will then be judgmentally compared with those derived from the OAI.

Preparatory to a factorial stability analysis, the total respondent sample will be divided into two comparable subsamples. All of the previously described factor analyses will be performed separately on each subsample, and factorial relationships between subsamples will be determined by Tucker's coefficient of congruence (Gorsuch, 1974; Harman, 1960). Each total sample factor will be judgmentally matched with a factor from each subsample, and the coefficient of congruence between the two commonly matched subsample factors will be taken as the stability index for the total sample factor.

Reliability Analysis

Ballentine (1982) conducted a preliminary reliability analysis. Unlike previous studies with the OAI (Riccobono and Cunningham, 1971a and b; Boese

and Cunningham, 1975; Parry-Hill , 1985), job ratings were determined by job incumbents, as opposed to job analysts or graduate students. Therefore, only one job rating was performed for each job in the inventory. Since there was only one rating per job, Ballentine conducted a test-retest reliability analysis. One hundred twenty-two respondents rerated their jobs, using the GWI , approximately two months after rating their jobs using the GWI the first time. Based on self reports, eleven of these individuals said they had changed jobs between the two ratings.

For the analyses, correlations were made between the time one and time two item ratings. The r's were transformed to Fisher z-scores, then mean and standard deviations were calculated for the data and the z-scores transformed back to r's. Mean item test/retest reliability for the 266 GWI items was .62, and the test/retest reliability for the items within DAFSC profiles was .66. Ballentine concluded that the item reliabilities were adequate. (personal communication, December 28, 1986).

In addition to item reliabilities, it would be desirable to have reliability estimates for the factors derived in the proposed study. In this regard, two kinds of reliability analyses would be feasible: test-retest reliability and internal consistency reliability. Subject to time constraints, the following reliability analysis procedures might be carried out in the proposed study:

(a) Test-retest reliability: correlations between factor-score estimates from the first and second administrations of the GWI to 122 respondents.

(b) Internal consistency reliability: coefficient alpha or analysis of variance estimates based on the factors' salient items. These estimates would be based on the total sample of 2141 respondents.

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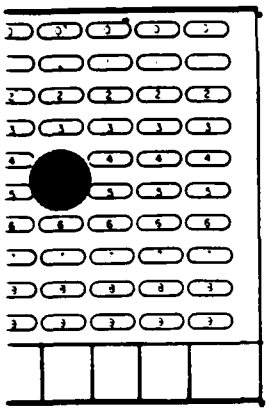
APPENDICES

APPENDIX A

GENERAL WORK INVENTORY



THE GENERAL WORK INVENTORY (GWI) ©

(Development Form)

This questionaire is called the General Work Inventory (GWI). It is designed to rovide a general description of any job.

The items in the GWI are called "work elements." These work elements describe ifferent kinds of activities, requirements, and conditions that occur in jobs. An xample of a work element is shown below:

TASTE--detecting/recognizing/judging taste differences
(Examples: flavor of food, wine, beverages, etc.)

Each element begins with a title in capital letters. Following this title are a ew words and examples which help explain the idea behind the element. However, please ote these examples are only a few of the many possible instances of the work element.

Your task is to decide whether each work element covers any part of the job you re rating. For example, the work element "TASTE" would occur in a cook's or brew aster's job but not in a carpenter's job.

LEASE READ the following instructions for rating the job on the work elements.

Instructions

There are two steps to analyzing a job with the GWI:

tep 1: Checking the Work Elements that are Part of the Job

a. Starting with Section A (Sensory Requirements), read through each work lement and decide whether or not it is part of the job.

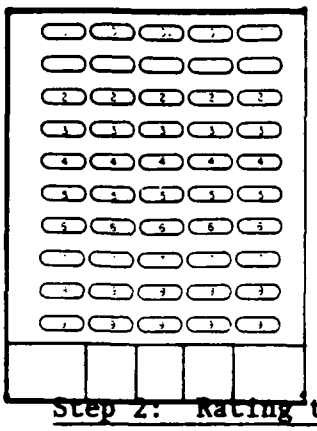
b. If the work element is a part of the job, put a check next to it in the olumn headed "Check If Part of Job." If the element is not part of the job, leave ie space next to it blank. For example:

✓	⊙⊙⊙⊙⊙⊙⊙⊙⊙⊙
	⊙⊙⊙⊙⊙⊙⊙⊙⊙⊙

If the work element is part of the job

If the work element is not part of the job

c. Stop when you have reached the end of Section A.



Instructions (Continued)

Step 2: Rating the Job on the Work Elements You Checked

a. Now, go back to the beginning of Section A (Sensory Requirements), and re-read the first element that you checked. Decide how much a part of the job that work element is. You will be using the following Part-of-the-Job scale to do this:

1 - An extremely small part of the job
2 - A very small part of the job
3 - A small part of the job
4 - A fairly small part of the job
5 - A moderate part of the job
6 - A fairly large part of the job
7 - A large part of the job
8 - A very large part of the job
9 - An extremely large part of the job

In making your rating, consider and weigh these three factors:

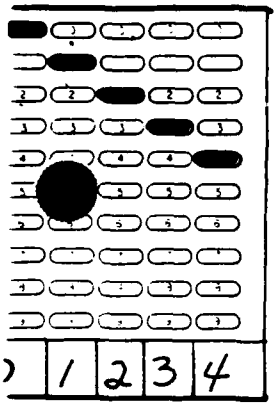
(1) How important/critical the element is to the job.
(2) How often the element occurs.
(3) How much time the job holder spends with the element.

b. Taking those three factors into account, assign a rating to the element by blackening the appropriate numbered circle in the column to the right. For example, if you decide that an element is "5 - A moderate part of the job," mark your rating as follows:

Sections to be Rated

After you have completed your ratings in Section A, go on to Section B (Information Elements) and follow the procedures outlined in Steps 1 and 2 above. After checking and rating Section B, go on to Section C, and so on, until you have completed all sections of work elements.

PLEASE FOLLOW THE CODING INSTRUCTIONS AT THE TOP OF THE NEXT PAGE



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In the box to the left is an example of booklet coding required on page 7, using number 01234. THIS IS AN EXAMPLE ONLY.

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On page 7 enter the following number _____ in the spaces on the bottom of the coding box. If the number did not print clearly, check for the same number on the front cover and page 3. Next, completely darken the oval with the corresponding number in the column above each space.

WHEN MARKING THE JOB INVENTORY SURVEY, CARE SHOULD BE TAKEN NOT TO OVERLAP INTO OTHER CIRCLES ON THE SAME LINE.

FIGURE 1
Right Way

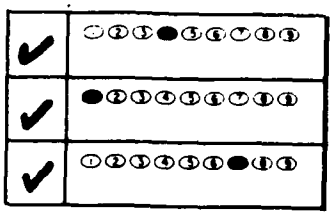
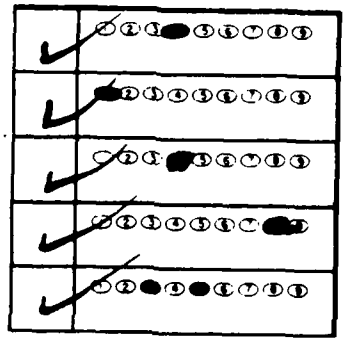


FIGURE 2
Wrong Way



FOR ALL ENTRIES AFTER THIS PAGE USE A

REMEMBER: FIRST, CHECK ELEMENTS IN A SECTION THAT ARE PART OF THE JOB; THEN, RATE THE CHECKED ELEMENTS.

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY - PLEASE

A. SENSORY REQUIREMENTS

CHECK ✓ IF PART OF JOB	KEEP ✓ WITHIN BLOCK	RATE PART
		1 - Extremely small part 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large

WHAT KINDS OF SENSORY ACTIVITIES DOES THE JOB HOLDER ENGAGE IN?

1. NEAR VISION-- seeing detail at about normal reading distance (less than 20 inches). (Examples: fine print, small dials/ gauges, hole in a sewing needle, thermometer readings, etc.)

2. FAR VISION--seeing detail beyond normal reading distance (Examples: road signs, wheels down on landing aircraft, numbers on sports jerseys, license plate numbers, etc.)

3. COLOR VISION--seeing colors and color differences. (Examples: fabric colors, diamond colors, traffic lights, paint colors, color codes, etc.)

4. NIGHT VISION--seeing in the dark. (Examples: patrolling/ guarding an area at night, driving at night, spotting a target at night, working in a dark cave or mine, etc.)

5. VISUAL DISTANCE JUDGMENT--judging distances by sight. (Examples: distance to a stop sign or target, which of two cars is further away, distance between aircraft, etc.)

6. HEARING--detecting/recognizing/judging sounds and differences or changes in sound quality. (Examples: engine noise, piano pitch, tone of a singer's voice, sonar signals, radio messages, etc.)

7. TOUCH--detecting/recognizing/judging characteristics of objects by feel. (Examples: smoothness of a surface, texture of cloth, size of a nail, water in soil, fit of nut and bolt, etc.)

8. SMELL--detecting/recognizing/judging odors and odor differences. (Examples: scent of perfumes, odor of a gas leak or chemical reaction, odor of food, aroma of wines, etc.)

9. TASTE--detecting/recognizing/judging tastes and taste differences. (Examples: flavor of food, wine, beverages, etc.)

-STOP-

Have you finished checking the work elements in this section? If so, go back and rate the elements you checked.

When you have rated all of the checked elements, go on to Section B (Information Elements).

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY—PLEASE

CHECK ✓ IF PART OF JOB

Keep ✓ Within Block

PART OF THE JOB RATE

1 - Extremely small
2 - Very small part
3 - Small part
4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

B. INFORMATION ELEMENTS

HAT KINDS OF INFORMATION DOES THE JOB HOLDER RECEIVE, PROCESS, R PRODUCE? This information can be in the forms of printed or poken words, numbers, symbols, tables, graphs, drawings, diarams, signals, etc.

-1. Forms of Information Received/Used

10. WRITTEN WORDS. (Examples: letters, books, technical reports, forms, journal articles, memos, etc.)

11. SPOKEN WORDS. (Examples: phone calls, oral reports, directions or instructions, orders, advice, lectures, etc.)

12. NUMBERS AND MATH SYMBOLS. (Examples: whole numbers, fractions, decimals, statistical formulas, equations, account ledgers, logarithms, etc.)

13. WRITTEN SYMBOLS. (Examples: shorthand, chemical or editing symbols, medical prescriptions, etc.)

14. TABLES/GRAPHS/CHARTS. (Examples: table of accident statistics, bar chart of economic growth, graph of relationship between morale and re-enlistment, tax tables, etc.)

15. READINGS FROM MEASUREMENT/TESTING DEVICES AND INDICATORS. (Examples: scales, rulers, micrometers, instrument-panel dials and gauges, warning lights, monitoring devices such as radar and EKG, stopwatches, equipment/material testing devices, etc.)

16. DRAWINGS/PICTURES/DIAGRAMS. (Examples: sketches, blueprints, photos, motion pictures, circuit diagrams, etc.)

17. VISUAL AND HEARABLE CODES/SYMBOLS. (Examples: Morse or railway codes; traffic control "lingo"; light, flag, or hand signals; etc.)

-2. Information-Related Activities

18. READING--written/printed material for understanding. (Examples: reading aircraft maintenance summaries, technical reports, correspondence, repair manuals, etc.)

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

B. INFORMATION ELEMENTS (CONTINUED)

CHECK ✓ IF PART OF JOB

Keep ✓ Within Block

THE JOB RATE

1 - Extremely small
2 - Very small part
3 - Small part
4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

19. ORDINARY SPEAKING--using conversational English; talking with others about subjects which are easy to understand. (Examples: ordering supplies by phone, passing the word to others at work, answering sales questions, etc.)

20. DIFFICULT SPEAKING--using proper grammar, technical terms, or difficult words; speaking correctly about involved subjects. (Examples: lecturing a class, presenting a technical paper, counseling a client, addressing a meeting, etc.)

21. ROUTINE WRITING. (Examples: writing down food or sales orders, filling out forms, writing short notes such as telephone messages, writing a traffic ticket, etc.)

22. DIFFICULT WRITING--writing precisely/carefully (using proper grammar) about involved subjects. (Examples: patient health summaries, aircraft maintenance summaries, technical reports, business letters, etc.)

23. USING FOREIGN LANGUAGES--reading, speaking, or writing. (Examples: Spanish, French, Italian, German, Chinese, etc.)

24. CLERICAL OPERATIONS--checking, comparing, or copying the details in written/printed material (words, numbers, symbols, etc.) (Examples: taking dictation, typing a report from a draft, proofreading a letter, comparing lists of names, matching sales receipts against a ledger, keypunching numbers from a record sheet, etc.)

25. COLLECTING/ORGANIZING/SUMMARIZING--written, numerical, or symbolic information for further use. (Examples: preparing a list of book titles on a subject, collecting and classifying recipes for a book, organizing data into tables/charts, preparing flight schedules, etc.)

26. STUDYING/EVALUATING--carefully examining/studying information (written, spoken, numerical, graphic, etc.); identifying its important parts and how they relate; recognizing inconsistencies. (Examples: finding the main points in a report, speech, or table; detecting flaws in a production plan; examining lab analysis data or machinery blueprints; studying legal documents; etc.)

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	Keep ✓ Within Block	PART OF THE JOB RATE
			1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
27. CREATING INFORMATION--using different sources of information (written, spoken, numerical, graphic, etc.) to produce/create new information, such as designs, plans, theories, formulas, story plots, ideas, etc. (Examples: designing an engine change using reports and mechanical principles, making a prediction from weather or research data, creating a political cartoon based on news events, writing a historical novel, etc.)			
28. TECHNICAL DRAWING. (Examples: drawing/drafting architectural plans, mechanical blueprints, wiring and circuit diagrams, maps, charts and other displays, etc.)			
29. NUMERICAL OPERATIONS--solving/working number problems. (Examples: figuring hourly wages, solving equations, etc.)			
30. AUTOMATED DATA PROCESSING--using computers and related equipment. (Examples: entering data into a computer through a card reader or video terminal, analyzing data with computer programs, receiving output from a printer, etc.)			
31. PROFESSIONAL WRITING--writing for publication or commercial purposes. (Examples: newspaper or magazine articles, trade, technical, or scientific journal articles; radio or TV commercials; novels or plays; textbooks; etc.)			
32. RESEARCHING--using scientific methods to discover new facts or to test theories, products, or applications. (Examples: studying the effects of drugs on behavior or chemicals on cancer, comparing the safety of car designs, developing a new fiber, studying cultural differences of people, etc.)			
33. INVESTIGATING--collecting information about people, events, or places to answer questions or make decisions about them. (Examples: doing a credit or security check on someone; investigating crimes, aircraft accidents, or compliance with safety regulations; etc.)			
34. BOOKKEEPING/ACCOUNTING--keeping records or accounts of business/financial dealings, property, assets, etc.; preparing and analyzing financial reports. (Examples: making up time sheets and payrolls, computing production costs, preparing tax returns, auditing company records, keeping property records, etc.)			

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	Keep ✓ Within Block	PART OF THE JOB RATE
35. STOCKING/INVENTORYING--keeping a record or inventory of materials, merchandise, supplies, tools, equipment, etc.; ordering, receiving, storing, issuing, shipping, accounting for, or assigning space to such items. (Examples: supply chief, shipping/receiving clerk, librarian, parts clerk, stockroom supervisor, storekeeper, etc.)			
36. VISUAL ART PRODUCTION--by combining personal expression, aesthetic judgment, and art concepts/techniques. (Examples: painting landscapes; drawing cartoons or magazine illustrations; designing decorations for packages, products, or ads; etc.)			
B-3. Content of Information Used and Produced: Includes plans, ideas, innovations, reports, manuals, speeches, explanations, instructions, designs, diagrams, drawings, tables, formulas, etc. (A number of information-content areas are described below. For each of those areas, decide if the job holder: (1) USES the described information, and (2) PRODUCES OR COMMUNICATES that kind of information.)			
37. USING MECHANICAL INFORMATION. (Examples: maintenance and repair manuals, machine drawings, engine test reports, vehicle defect reports, maintenance records, machine designs, etc.)			
38. PRODUCING/COMMUNICATING MECHANICAL INFORMATION.			
39. USING ELECTRICAL/ELECTRONIC INFORMATION. (Examples: circuit or transformer diagrams, maintenance and repair manuals, equipment test reports, voltmeter readings, book on electronic principles, power transmission plans, etc.)			
40. PRODUCING/COMMUNICATING ELECTRICAL/ELECTRONIC INFORMATION.			
41. USING STRUCTURAL/CONSTRUCTION INFORMATION--about structures, construction, and related principles. (Examples: building material lists, house plans, articles on architectural design, building or bridge designs, book on house framing, etc.)			
42. PRODUCING/COMMUNICATING STRUCTURAL/CONSTRUCTION INFORMATION.			

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY—PLEASE

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
	Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
43. USING INFORMATION ABOUT MATERIALS/SUBSTANCES/CHEMICALS--their characteristics or related procedures. (Examples: readings from testing and measuring devices, handbook on material properties, chemical testing/analysis records, storage/handling instructions, plans for substance manufacture, etc.)		
44. PRODUCING/COMMUNICATING INFORMATION ABOUT MATERIALS/SUBSTANCES/CHEMICALS.		
45. USING INFORMATION ABOUT FOOD--its characteristics, preparation, or processing. (Examples: menus, food and drink recipes, articles on food processing, nutrition guides, kitchen cleanliness standards, food requests and estimates, etc.)		
46. PRODUCING/COMMUNICATING INFORMATION ABOUT FOOD.		
47. USING MEDICAL/HEALTH INFORMATION. (Examples: first-aid manuals, lab reports, thermometer readings, diets, medical journal articles, anatomy charts, hearing test results, medical records, physical therapy treatment plans, etc.)		
48. PRODUCING/COMMUNICATING MEDICAL/HEALTH INFORMATION.		
49. USING PLANT-LIFE INFORMATION. (Examples: tables of normal crop yield, lecture on plant care, instructions on weed control, timber survey or seed test reports, book on gardening, reports on crop research, etc.)		
50. PRODUCING/COMMUNICATING PLANT-LIFE INFORMATION.		
51. USING INFORMATION ABOUT ANIMALS. (Examples: book on dog training, report on migration of geese, lecture on termite life cycle, manual on livestock care and breeding, records on lab animals, movie on wildlife, etc.)		
52. PRODUCING/COMMUNICATING INFORMATION ABOUT ANIMALS.		
53. USING INFORMATION ABOUT INDIVIDUALS and events/incidents involving them (their behavior, performance, activities, etc.) (Examples: resume on a job applicant, news story or TV interview about a public figure, job performance ratings, report on a security investigation or bank robbery, scouting report on an athelete, disciplinary reports, etc.)		
54. PRODUCING/COMMUNICATING INFORMATION ABOUT INDIVIDUALS.		

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB / Keep ✓ Within Block	PART OF THE JOB RATE
55. USING HUMAN IMPROVEMENT INFORMATION--related to education, social services, training, counseling, religious guidance, etc. (Examples: course outlines/lectures, referral agency lists, advice to social service clients, training manuals, book on counseling, articles on self-improvement, community need plans, etc.)		
56. PRODUCING/COMMUNICATING HUMAN IMPROVEMENT INFORMATION.		
57. USING VISUAL ART/DECORATIVE INFORMATION. (Examples: advice on interior decorating, articles on art objects, lecture on sculpture, articles on flower arrangement, magazine design layouts, etc.)		
58. PRODUCING/COMMUNICATING VISUAL ART/DECORATIVE INFORMATION.		
59. USING PERFORMING ARTS/ENTERTAINMENT INFORMATION. (Examples: musical compositions, TV report on a sporting event, review of a play or movie, actor's script, comedy lines, instructions to entertainers or professional atheletes, etc.)		
60. PRODUCING/COMMUNICATING PERFORMING ARTS/ENTERTAINMENT INFORMATION.		
61. USING SALES/MERCHANDISING INFORMATION. (Examples: sales or inventory records, sales ads, articles on sales techniques, sales plans, reports at sales/marketing meetings, product or service descriptions, sales agreements, etc.)		
62. PRODUCING/COMMUNICATING SALES/MERCHANDISING INFORMATION.		
63. USING ORGANIZATIONAL MANAGEMENT/ADMINISTRATION INFORMATION--related to the operation, activities, goals, accomplishments, etc., of organizations. (Examples: memos, business letters, directives, budgets, production records, personnel forecasts, oral reports at staff meetings, etc.)		
64. PRODUCING/COMMUNICATING ORGANIZATIONAL MANAGEMENT/ADMINISTRATION INFORMATION.		
65. USING LEGAL/CONTRACTUAL INFORMATION. (Examples: government regulations, laws, abstracts of titles, leases, corporate or real estate contracts, tax rulings, mortgages, patents, court records, legal/contractual advice, etc.)		
66. PRODUCING/COMMUNICATING LEGAL/CONTRACTUAL INFORMATION.		

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are If you checked it - Rate it.

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
	Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
67. USING ECONOMIC INFORMATION--related to economic/business conditions, trends, principles, etc. (Examples: supply and demand charts/graphs, books on economic theory, stock market advice, articles on investment trends, employment statistics, lectures on monetary policy, wage and salary reports, etc.)		
68. PRODUCING/COMMUNICATING ECONOMIC INFORMATION.		
69. USING ENVIRONMENTAL INFORMATION. (Examples: topographical maps, graphs of daily temperatures, barometric readings, analyses of aerial photos, weather charts, tide tables, celestial charts/tables, conservation lectures, air or water quality reports, water supply reports, weather forecasts, etc.)		
70. PRODUCING/COMMUNICATING ENVIRONMENTAL INFORMATION.		
71. USING PHYSICAL SCIENCE/TECHNOLOGY INFORMATION--related to chemistry, physics, geology, or their practical uses. (Examples: drilling maps, lab analysis guides/reports; reports on nuclear radiation; books on hydraulics; chemical blending schedules; reports on paints, plastics, mineral deposits, etc.; production formulas; etc.)		
72. PRODUCING/COMMUNICATING PHYSICAL SCIENCE/TECHNOLOGY INFORMATION.		
73. USING ENGINEERING INFORMATION--about plans/designs/development of machinery, equipment, structures, products, manufacturing processes, work environments, etc. (Examples: cars; weapons systems; farm or industrial machinery; electronic, mining, medical, or scientific equipment; bridges, dams, power plants; etc.)		
74. PRODUCING/COMMUNICATING ENGINEERING INFORMATION.		
75. USING BIOLOGICAL INFORMATION--about the characteristics/processes of living things or related practical uses. (Examples: written material, lectures, graphs, etc., on such subjects as cell structures, micro-organisms, genetics of crops or livestock, effects of acid rain on forests, animal characteristics, fish infections in hatcheries, etc.)		
76. PRODUCING/COMMUNICATING BIOLOGICAL INFORMATION.		

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1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY–PLEASE

B. INFORMATION ELEMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	Keep ✓ Within Block	PART OF THE JOB RATE
77. USING SOCIAL OR BEHAVIORAL SCIENCE INFORMATION--related to psychology, sociology, anthropology, political science or their practical uses. (Examples: written material, tables, lectures, etc., on such subjects as job satisfaction, personnel selection, personal adjustment, cultural differences, criminal behavior, voting behavior, etc.)			
78. PRODUCING/COMMUNICATING SOCIAL OR BEHAVIORAL SCIENCE INFORMATION.			
79. USING LIBERAL ARTS/HUMANITIES INFORMATION--related to literature, language, philosophy, or history. (Examples: written material or lectures on such subjects as French grammar, American literature, World War II, the philosophy of science or religion, etc.; historical records; other literature such as poetry or novels; etc.)			
80. PRODUCING/COMMUNICATING LIBERAL ARTS/HUMANITIES INFORMATION.			

1 - Extremely small
2 - Very small part
3 - Small part
4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

-STOP-

Have you finished checking the work elements in this section? If so, go back and rate the elements you checked.

When you have rated all of the checked elements, go on to Section C (General Mental Requirements).

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY—PLEASE

C. GENERAL MENTAL REQUIREMENTS

CHECK ✓ IF PART OF JOB

Keep ✓ Within Block

PART OF THE JOB RATE

1 - Extremely small
2 - Very small part
3 - Small part
4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

WHAT KINDS OF THINKING DOES THE JOB HOLDER ENGAGE IN?

1. UNDERSTANDING WORDS--knowing the meanings of many different words. (Examples: reading contracts, listening to course lectures or paper presentations, reading technical reports, etc.)

2. EXPRESSING IDEAS--putting ideas/thoughts into words (written or spoken). (Examples: writing technical reports, dictating business letters, questioning witnesses, broadcasting sports events, speaking to groups, etc.)

3. CREATING IDEAS--thinking up original ideas that can be expressed in words. (Examples: thinking of comic lines, thinking up new ideas for a publicity campaign, thinking up a new product name or slogan, creating political cartoons, etc.)

4. [illegible]ECTING PROBLEMS--spotting and understanding problems and seeing their causes/effects. (Examples: production manager seeing ways to improve a manufacturing process, police chief looking for holes in a security plan, sales manager foreseeing problems with plans to promote a new product, etc.)

5. VERBAL REASONING/PROBLEM SOLVING--using words and ideas to figure out/solve involved problems; requires orderly, logical thought. (Examples: lawyer preparing an argument, commander solving a supply problem, planner dealing with a traffic problem, scientist developing a theory, etc.)

6. MATHEMATICAL REASONING/PROBLEM SOLVING--figuring out complicated problems involving numbers and symbols. (Examples: engineering technician calculating stress factors, computer technician writing a program, chemist solving an equation, aerospace engineer using a formula to find wing lift, etc.)

7. USING BASIC ARITHMETIC--carrying out simple addition, subtraction, multiplication, and division. (Examples: carpet layer figuring out the floor space in a room, agent computing insurance premiums, bookkeeper adding/subtracting [illegible]mbers, etc.)

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

C. GENERAL MENTAL REQUIREMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
	Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
88. OBJECT PROBLEM SOLVING/INVENTION--solving problems or thinking of new ideas involving objects/things. (Examples: figuring out how to put a carburetor together, how to put a new part on a machine, or how to connect electronic components; designing unusual buildings, new tools, new furniture, new machines; etc.)		
89. PLANNING--thinking of the details/steps needed to accomplish a goal and putting those details in their proper order. (Examples: social director planning camp activities, manager planning a production change, supervisor planning the yearly work/vacation schedule, engineer planning research applications, leader planning a military operation, etc.)		
90. DETECTING OBJECTS--visually spotting and recognizing objects that are difficult to see. (Examples: identifying ships or aircraft at a distance, animals in a wildlife preserve, a hidden military target in an aerial photo, cells under a microscope, a criminal suspect in a crowd, etc.)		
91. VISUALIZING OBJECTS--seeing and understanding shapes, relationships, and arrangements of physical objects (actual or drawn); also, manipulating/changing these in your mind. (Examples: architect designing a building, metal worker making a heating duct from blueprints, dentist using a mirror while filling a tooth, mechanic working on a gear system, artist painting a landscape, etc.)		
92. POSITION/LOCATION AWARENESS--visually orienting oneself to surrounding objects and space; knowing where you are and your position/location in relation to the objects or landmarks around you. (Examples: visually piloting an aircraft or boat, climbing a mountain, hiking cross-country with a map and compass, leading a squad of soldiers through maneuvers, etc.)		
93. MEMORIZING/REMEMBERING--mentally storing information for later use and recalling it when needed. (Examples: sales prices, phone numbers, codes, names, facts about people, ideas, aircraft call signs, locations on maps, diagrams of football plays, etc.)		
94. ARTISTIC JUDGMENT/CREATIVITY--evaluating/creating things that are artistically pleasing to the eye. (Examples: decorator coordinating colors in a room, artist designing a magazine layout, art teacher evaluating a student's work, designer creating a dress, etc.)		

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

C. GENERAL MENTAL REQUIREMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
		1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
95. SOCIAL JUDGMENT--paying attention to how people act (their gestures, voice changes, facial expressions, body postures, etc.) and figuring out how they feel (their thoughts, attitudes, intentions, etc.). (Examples: salesperson sizing up a customer, counselor talking with a student, manager talking with an employee, police officer questioning a suspect, etc.)		
-STOP-		
ave you finished checking the work elements in this section? f so, go back and rate the elements checked.		
hen you have rated all of the checked elements, go on to ection D (General Physical Requirements).		

Keep ✓ Within Block

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1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY–PLEASE

CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large

D. GENERAL PHYSICAL REQUIREMENTS

WHAT KINDS OF BASIC PHYSICAL ACTIVITIES DOES THE JOB HOLDER ENGAGE IN?

96. WORKING WITH FINGERS--making skilled finger movements; manipulating small objects with your fingers. (Examples: putting pieces in a jigsaw puzzle, wiring appliances, adjusting a watch, threading a needle, performing surgery, threading nuts on bolts, etc.)

97. WORKING WITH HANDS--making skilled hand movements; moving your hands according to what you see. (Examples: packing or wrapping boxes, changing spark plugs, cutting meat with a knife, sorting mail into boxes, cutting paper on a line, etc.)

98. STEADY HANDS--keeping your arms and hands steady while doing precise tasks. (Examples, pouring acid into a test tube, tracing letters, gluing small pieces of wood together, keeping a gun on target, etc.)

99. COORDINATION AND BALANCE--coordinating movements of arms, hands, feet, legs, and body; also, maintaining balance/body position. (Examples: climbing a power pole or tree, catching a baseball, swimming, walking on a rolling ship deck, balancing a serving tray, driving a tractor-trailer truck, etc.)

100. TRACKING--following a moving target or keeping a moving object on course. (Examples: following flying birds with binoculars, cutting a pattern with a jig saw, steering a car, aiming at a moving target, etc.)

101. QUICK REACTIONS--responding very quickly to a sight or sound. (Examples: stopping a machine when a warning light comes on, beginning a race at the sound of the gun, stopping a car to avoid a child, dropping to the ground when shot at, etc.)

102. STRENGTH--using strength for lifting, carrying, shoving, pulling, grasping/squeezing, throwing, etc. (Examples: shoving a stove into place, stacking hay bales, loading a moving van, throwing a line from a ship, etc.)

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

D. GENERAL PHYSICAL REQUIREMENTS (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
13. PHYSICAL ENDURANCE--moving the body (or body parts) continually or repeatedly over a long period of time without overtiring. (Examples: digging a ditch, fighting a forest fire, hammering nails or driving screws all day, hiking cross-country, etc.)		
14. SITTING. (Examples: driving a bus, selling tickets at a movie theater, typing or keypunching, writing a novel, etc.)		
15. STANDING OR WALKING. (Examples: checking people out at a cash register, cutting people's hair, guarding a gate, helping people find items in a store, ushering at a theater, walking a police beat, etc.)		
16. RUNNING. (Examples: rushing people into an emergency room, playing a sport, chasing a thief, catching an animal, laying a fire hose, etc.)		
17. BACK/LEG BENDING ACTIVITIES--stooping, kneeling, crawling, crouching, lying, etc. (Examples: changing a flat tire, laying carpet, scrubbing floors, weeding flower beds, fixing sink drains, working under a car, picking up trash, etc.)		

-STOP-

ve you finished checking the work elements in this section?
so, go back and rate the elements you have checked.

en you have rated all of the checked elements, go on to
ction E (Physical Activities).

Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

2. In the "Part-of-the Job" column, rate how much a part of the job all checked elements are. If you checked it - Rate it.

#2 PENCIL ONLY—PLEASE

E. PHYSICAL ACTIVITIES

CHECK ✓ IF PART OF JOB

Keep ✓ Within Block

PART OF THE JOB RATE

1 - Extremely small
2 - Very small part
3 - Small part
4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

WHAT KINDS OF PHYSICAL ACTIVITIES INVOLVING TOOLS, EQUIPMENT, MACHINES, MATERIALS, PEOPLE, ANIMALS, ETC., DOES THE JOB HOLDER ENGAGE IN?

E-1. Tools/Equipment/Machines Used or Operated

108. SMALL HANDTOOLS--usually held in one hand. (Examples: hammer, glue brush, jig saw, screwdriver, paint scraper, knife, chisel, electric drill or clippers, soldering iron, etc.)

109. LARGE HANDTOOLS/PORTABLE HAND-HELD EQUIPMENT--held in two hands or only partly hand-held. (Examples: air wrench, chain saw, shovel, pick, posthole digger, riveting gun, jack hammer, floor sander, etc.)

110. PORTABLE WORK AIDS. (Examples: ladder, wheelbarrow, jack, bucket, clamp, block and tackle, hose, chuck, etc.)

111. FIXED-LOCATION MACHINES/EQUIPMENT (not hand-held)--used in one place to work on or process objects, materials, or substances. (Examples: radial arm saw, meat slicer, sewing machine, drill press, lathe, tire recapper, die-casting machine, printing press, etc.)

112. ELECTRICAL/ELECTRONIC EQUIPMENT--except communication devices and devices used to process objects, materials, or substances. (Examples: radar, sonar, control equipment, guidance systems, navigation equipment, etc.)

113. COMMUNICATION EQUIPMENT. (Examples: telephone, telegraph, radio transmitter-receiver, public address system, signal lights, etc.)

114. MEASURING/TESTING DEVICES. (Examples: scales, micrometer, feeler gauge, voltmeter, ohmmeter, circuit analyzer, caliper, thermometer, stopwatch, ruler, transistor tester, etc.)

115. COMPUTING DEVICES. (Examples: computer, calculator, auditing machine, adding machine, tabulating machine, etc.)

116. KEYBOARD EQUIPMENT (except computing devices). (Examples: typewriter, keypunch, stenotype, magnetic-tape composer, computer terminal, etc.)

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#2 PENCIL ONLY-PLEASE

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB — Keep ✓ Within Block	PART OF THE JOB RATE: 1 - Extremely small; 2 - Very small part; 3 - Small part; 4 - Fairly small part; 5 - Moderate part; 6 - Fairly large part; 7 - Large part; 8 - Very large part; 9 - Extremely large
17. OFFICE MACHINERY/EQUIPMENT--except keyboard and computing devices. (Examples: duplicating machine, photocopy machine, paper cutter, collator, card sorter, etc.)		
18. MEDICAL/HEALTH EQUIPMENT. (Examples: X-ray machine, EKG machine, respirator, autoclave, stethoscope, audiometer, kidney machine, ultrasound machine, etc.)		
19. SCIENTIFIC/TECHNICAL DEVICES. (Examples: microscope, telescope, spectrometer, optical lenses and prisms, lab instruments, surveying transit, cyclotron, sextant, etc.)		
20. RECORDING/DEVELOPING EQUIPMENT--photographic, motion picture, video, and sound. (Examples: still camera, motion picture camera, video camera, sound recording equipment, tripods, flood lights, film developing equipment, etc.)		
21. AUDIO/VISUAL PRESENTATION EQUIPMENT. (Examples: overhead or slide projector, motion picture projector, video-tape player, audio-tape or record player, etc.)		
22. HAND-HELD WRITING/DRAWING/MARKING DEVICES. (Examples: pencil, pen, crayon, chalk, compass, etc.)		
23. SPORTING EQUIPMENT. (Examples: baseball bat and glove, hockey stick, basketball, starter's gun, football, rod and reel, etc.)		
24. FIREARMS AND OTHER HAND-HELD WEAPONS. (Examples: pistol, riot gun, rifle, shotgun, tear gas canister, night stick, etc.)		
25. MUSICAL INSTRUMENTS. (Examples: trumpet, piano, clarinet, bass drum, tuba, violin, guitar, etc.)		
26. MECHANIZED WORK EQUIPMENT--machines that move under their own power and work on objects, materials, land features, etc. (Examples: bulldozer, road grader, wheat combine, crane, fork lift, tractor, front-end loader, etc.)		
27. HIGHWAY VEHICLES. (Examples: automobile, pick-up truck, tractor-trailer truck, bus, hook-and-ladder truck, moving van, motorcycle, etc.)		
28. OFF-ROAD VEHICLES. (Examples: snowmobile, all-terrain vehicle, tracked vehicles such as tanks or personnel carriers, etc.)		

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E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
129. RAIL VEHICLES. (Examples: subway train, trolley, freight or passenger train, etc.)		
130. FLYING VEHICLES--(Examples: airplanes, helicopters, etc.)		
131. BOATS/SHIPS. (Examples: fishing trawler, patrol boat, tugboat, hydroplane, launch, etc.)		
132. FIXED-LOCATION CONVEYORS. (Examples: conveyor belt, freight or grain elevator, ski lift, ferris wheel, tram, etc.)		
E-2. Work Performed with Tools/Equipment/Machines/Devices		
133. PRECISION WORKING--paying close attention to detail, using a steady and sure hand. (Examples: taking blood samples, making false teeth, engraving jewelry, making microscope slides, drilling a tooth, soldering electronic parts, etc.)		
134. CUTTING BY BLADE--cutting, slicing, or shaving with a blade. (Examples: using a knife, scapel, razor, meat slicer, paper cutter, etc.)		
135. CHIPPING/PLANING/MILLING--shaping material by peeling or chipping away with cutting tools. (Examples: using a chisel, planer, milling machine, lathe, etc.)		
136. SAWING. (Examples: using a hand saw, portable power saw, jig saw, radial arm saw, etc.)		
137. DRILLING/BORING--making holes in materials/objects with a rotary cutting tool. (Examples: using an electric hand drill, drill press, boring machine, reaming machine, etc.)		
138. ABRADING--shaping, smoothing, sharpening, polishing by a wearing-away action; includes grinding, filing, sanding, honing, buffing, etc. (Examples: using a grinding machine, hand file, sandpaper, honing stone, buffing wheel, polishing machine, etc.)		
139. MECHANICAL CONNECTING/FASTENING/JOINING--nailing, screwing, bolting, riveting, stapling, etc. (Examples: using a screwdriver, stapler, air wrench, hammer, rivet gun, etc.)		
140. FUSING OR CUTTING BY HEAT--welding, arc cutting, soldering, etc. (Examples: using a spot welder, oxyacetelene torch, arc cutter, soldering gun, plastic heat fusion machine, etc.)		

Keep ✓ Within Block

1 - Extremely small
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5 - Moderate part
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7 - Large part
8 - Very large part
9 - Extremely large

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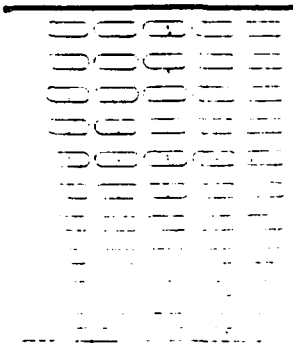
#2 PENCIL ONLY—PLEASE

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB / Keep ✓ Within Block	PART OF THE JOB RATE (1 - Extremely small, 2 - Very small part, 3 - Small part, 4 - Fairly small part, 5 - Moderate part, 6 - Fairly large part, 7 - Large part, 8 - Very large part, 9 - Extremely large)
41. LIQUID APPLICATION/COATING--brushing, spraying, rolling, dipping, etc. (Examples: painting, undercoating, rust-proofing, varnishing, whitewashing, staining, etc.)		
42. BONDING/SEALING--gluing, caulking, puttying, vulcanizing, etc. (Examples: using a glue brush, putty knife, caulk gun, cementing machine, wood welding machine, tire recapper, etc.)		
43. MATERIAL FORMING--using heat to shape metal, plastic, or other materials; melting, casting, molding, extruding, rolling, forging, etc. (Examples: using an extruding press, forging press, die casting machine, etc.)		
44. CRUSHING/GRINDING/MIXING/SEPARATING MATERIALS OR SUBSTANCES. (Examples: using a paint mixer, food mixer, pulp beater, concrete mixer, meat grinding machine, crushing machine, centrifuge, shaker screen, filter, etc.)		
45. CHEMICALLY TREATING MATERIALS/SUBSTANCES. (Examples: bleaching fabric, etching with acid, tanning hides, using catalysts to study substances, developing film, chemical milling, preserving wood, etc.)		
46. ELECTRICALLY TREATING MATERIALS/SUBSTANCES. (Examples: electroplating, charging a battery, magnetizing metals, etc.)		
47. HEAT-TREATING OBJECTS/MATERIALS/SUBSTANCES--other than forming or cooking. (Examples: heating and tempering metal, baking freshly painted metal furniture, firing pottery, distilling alcohol, machine drying clothes, etc.)		
48. COOKING/PREPARING FOOD. (Examples: smoking ham, baking bread and pastries, preparing meals, cleaning fish or vegetables, etc.)		
49. SEWING/STITCHING. (Examples: using a sewing maching, hemstitching machine, quilting machine, needle and thread, etc.)		
50. FIBER/THREAD WORKING (other than sewing)--turning thread into fabric or rope; combing, separating, or straightening fiber or thread; weaving, knitting, twining, winding, etc. (Examples: using a weaving loom, knitting machine, spinning frame, crocheting needle, winding machine, etc.)		



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#2 PENCIL ONLY—PLEASE

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	Keep ✓ Within Block	PART OF THE JOB RATE
151. MASONING/TROWELING/CASTING--building things out of brick, stone, marble, etc.; spreading and smoothing concrete, plaster, asphalt, or mortar; pouring and casting concrete; etc. (Examples: building a stone fireplace, paving a driveway or road, plastering a wall, pouring a bridge abutment, etc.)			
152. EARTH WORKING/QUARRYING/MINING--digging, spreading, cultivating, moving, boring, blasting, etc. (Examples: working with tools such as a shovel, pick, posthole digger, jack hammer, etc.; operating equipment such as a tractor and plow, road grader, bulldozer, drilling machine; etc.)			
153. LAYING/COVERING--surfaces with materials. (Examples: laying roofing materials such as shingles, tar paper, or asphalt and gravel; installing floor tile or carpet; hanging wallpaper, etc.)			
154. CLEANING--removing unwanted matter from objects, materials, or places. (Examples: steam cleaning an engine, cleaning a building, laundering clothes, washing cars, etc.)			
155. LUBRICATING--applying oil, grease, or graphite to machinery/equipment to improve performance, reduce wear, or prevent rust/corrosion. (Examples: greasing a car, oiling watch parts, graphiting a lock, oiling a hinge, etc.)			
156. HOLDING/HANDLING THINGS. (Examples: using a bale hook, pitch fork, cant hook, ice tongs, pliers, forceps, clamp, vise, shovel, bucket, etc.)			
157. SUPPORTING/HOISTING. (Examples: using a ladder, car jack, block and tackle, electric winch, cable hoist, etc.)			
158. PRINTING--reproducing written material or pictures by the mechanical transfer of ink or dye to paper, cloth, etc. (Examples: operating a mimeograph machine, printing press, offset printer, etc.)			
159. TRANSPORTING--moving products, materials, or people from one place to another. (Examples: by car, bus, airplane, truck, train, ship, etc.)			
160. INSTALLING--placing or hooking up parts/components to larger systems; putting into use or service. (Examples: installing a washing machine, an air conditioner, a new muffler, electrical wiring and light fixtures, etc.)			

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#2 PENCIL ONLY—PLEASE

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
	Keep ✓ Within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large
1. ASSEMBLING--fitting standard parts together to make a whole. (Examples: assembling engines, electronic equipment, firearms, etc.)		
2. BUILDING STRUCTURES--attaching/connecting structural members/materials. (Examples: framing a house, riveting steel beams in place, building a wooden bridge or pier, building cabinets, etc.)		
3. FABRICATING (except assembling and building structures)--making things from materials. (Examples: costume jewelry, toys, leather goods, fishing rods, furniture, etc.)		
4. MAINTAINING/REPAIRING/SETTING UP MACHINES--keeping them in good operating condition, fixing them when needed, changing their function/performance, getting them ready for use. (Examples: engines, industrial machinery, office machinery, vehicles, etc.)		
5. MAINTAINING/REPAIRING/SETTING UP ELECTRICAL/ELECTRONIC EQUIPMENT--keeping it in good operating condition, fixing it when needed, getting it ready for use. (Examples: electrical transmission systems, communications equipment, computers, radar or guidance systems, electrical components of machines, etc.)		
6. MAINTAINING/REPAIRING STRUCTURES--keeping them in good condition and fixing them when needed. (Examples: buildings, houses, bridges, dams, etc.)		
7. MAINTAINING/REPAIRING OTHER PRODUCTS--except machines, electrical/electronic equipment, or structures. (Examples: tools, optical devices, leather goods, firearms, furniture, safety clothing, etc.)		
8. TROUBLESHOOTING--finding the causes of machine/equipment breakdown or malfunction. (Examples: using a circuit tester to find a bad component in an electronic system, finding the source of an engine knock or a Freon leak in an air conditioning system, etc.)		
9. ADJUSTING/TUNING--setting a device or machine to its best performance level. (Examples: adjusting a carburetor, aligning the wheels of a car, setting a testing device, calibrating a short-wave radio tuning device, etc.)		

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#2 PENCIL ONLY—PLEASE

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
170. GROOMING--applying treatments to improve the appearance of people or animals. (Examples: barbering, hair styling, manicuring, giving facials, applying make-up, bathing and cutting poodles, brushing horses, etc.)		
171. CARING FOR PLANT LIFE--farming, gardening, groundskeeping, forestry, horticulture, etc. (Examples: planting, fertilizing, watering, dusting, spraying, pruning, grafting, weeding, etc.)		
172. DECORATING/STYLING--producing visually pleasing effects with materials/objects. (Examples: decorating a room or a window display, creating an original dress or piece of jewelry, fashioning floral arrangements, decorating a stage set, handmaking a piece of fine furniture, etc.)		
E-3. Other Physical Work Activities		
173. WATCHING/MONITORING MACHINES OR EQUIPMENT--to make sure they are operating properly and to note changes in what they measure or monitor. (Examples: watching instruments in an intensive-care unit, operating a computer console, watching a plant control panel, monitoring a radar scope or aircraft instruments, etc.)		
174. INSPECTING--checking/examining things (equipment, products, facilities, etc.) against set requirements. (Examples: examining clothes for cut and seaming, checking a food service to see if it meets public health codes, checking assembly-line products for defects, etc.)		
175. GENERAL MATERIAL/OBJECT HANDLING--sorting, moving, loading, arranging, packing, wrapping, etc. (Examples: placing goods on shelves, packing household goods into boxes, loading crates on a truck, sorting fruit into bins, moving gravel in a wheelbarrow, wrapping packages, etc.)		
176. MEDICAL/HEALTH TREATING/CARING--people or animals. (Examples: examining patients, giving injections, bandaging, performing surgery, giving physical therapy, applying medicines, drawing blood, etc.)		
177. HANDLING/CARING FOR ANIMALS (except medical treatment). (Examples: walking a dog, taking care of farm animals, showing pets, caring for lab animals, grooming dogs, riding a horse, etc.)		

Keep ✓ Within Block

1 - Extremely small
2 - Very small part
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4 - Fairly small part
5 - Moderate part
6 - Fairly large part
7 - Large part
8 - Very large part
9 - Extremely large

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CHECK ✓ IF PART OF JOB

Keep ✓ Within Block

PART OF THE JOB RATE

1 - Extremely small
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E. PHYSICAL ACTIVITIES (CONTINUED)

78. HANDLING PEOPLE (except medical treatment). (Examples: searching a crime suspect, moving an accident victim, teaching a child to swim, bathing a patient, teaching ballroom dancing, etc.)

79. PROTECTING PROPERTY--keeping property from being damaged, stolen, compromised, etc. (Examples: guarding a factory gate, screening airline passengers, patrolling an area, checking for locked doors and safes, stopping a thief, checking for fire hazards, putting out a fire, etc.)

80. PERFORMING. (Examples: singing, dancing, playing a musical instrument, acting, playing professional sports, etc.)

4. Objects/Materials Acted Upon (with hands, tools, equipment, machines, chemicals, etc.)

E-4a. Living Things Acted Upon

81. PLANT LIFE. (Examples: crops, trees, shrubs, nursery plants, flowers, etc.)

82. ANIMALS. (Examples: pets, livestock, working animals, wildlife, fish, etc.)

83. PEOPLE. (Examples: medical and dental patients, barber and beautician customers, physical therapy patients, school children, etc.)

E-4b. Environmental Features Acted Upon

84. ENVIRONMENTAL/TERRAIN FEATURES. (Examples: hill through which a highway must be cut, lowland to be drained, field to be cultivated, stream to be dammed, ditch to be dug, etc.)

E-4c. Materials Acted Upon

85. CRUDE MATERIALS--materials in unprocessed or minimally processed form. (Examples: geological materials such as ore, coal, oil, stone; unprocessed wood such as logs; animal materials such as sides of beef, fish, hides, bulk milk; plant materials such as bulk grain, cotton or tobacco bales, etc.)

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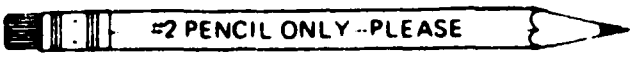

E. PHYSICAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	NEED ✓ within Block	RATE: 1 - Extremely small part; 2 - Very small part; 3 - Small part; 4 - Fairly small part; 5 - Moderate part; 6 - Fairly large part; 7 - Large part; 8 - Very large part; 9 - Extremely large
186. PROCESSES/FINISHED MATERIALS/SUBSTANCES. (Examples: sheet metal, copper tubing, finished lumber, paper, roofing material, brick, glass, sheet rubber, gasoline and other processed fuels, art and craft materials, cloth, medical materials, processed foods, etc.)	✓		
E-4d. Finished Parts/Components Acted Upon (Here "acting upon" means working on, but not using/operating.)			
189. MACHINES/MECHANICAL EQUIPMENT--except using/operating. (Examples: motor vehicles, industrial machinery, office machinery, shop machinery, aircraft, printing press, etc.)			
190. ELECTRICAL/ELECTRONIC EQUIPMENT--except using/operating. (Examples: TV sets, medical equipment such as EKG or X-ray machines, radar, guidance systems, power transmission systems, electronic computers, industrial control equipment, etc.)			
191. OTHER EQUIPMENT (not mechanical or electrical/electronic)--except using/operating. (Examples: cameras, firearms, tools, scientific or optical equipment, scales, sporting equipment, etc.)			
192. EXTERIORS OF BUILDINGS. (Examples: houses, office buildings, hotels, industrial buildings, etc.)			
193. INTERIORS OF BUILDINGS. (Examples: walls, floors, ceilings, fixtures, doors, built-in cabinets, shelves, etc.)			
194. STRUCTURES/CONSTRUCTIONS OTHER THAN BUILDINGS. (Examples: bridges, towers, tunnels, dams, railways, streets and highways, runways, swimming pools, culverts, docks, water tanks, etc.)			
195. OTHER MANUFACTURED/FABRICATED PRODUCTS (not listed elsewhere)--except using. (Examples: furniture, toys, musical instruments, file cabinets, apparel, leather goods, utensils, jewelry, etc.)			

-STOP-

~~Have you finished checking the work elements in this section?~~
If so, go back and rate the elements you checked.

When you have rated all of the checked elements, go on to Section F (Interpersonal Activities).

1. Check (✓) the elements in each section which are part of the job. If an element is not part of the job - Don't check it.

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#2 PENCIL ONLY-PLEASE

F. INTERPERSONAL ACTIVITIES

CHECK ✓ IF PART OF JOB — Keep ✓ within Block	PART OF THE JOB RATE
	1 - Extremely small 2 - Very small part 3 - Small part 4 Fairly small part 5 - Moderate part 6 Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large

WHAT KINDS OF CONTACTS WITH PEOPLE ARE REQUIRED IN THE JOB?

96. MANAGING/ADMINISTERING--directing, planning, carrying-out the affairs of organizations. (Examples: making policies, determining goals, coordinating the activities of individuals and units, informing and advising other administrators, directing line supervisors, etc.)

97. SUPERVISING. (Examples: assigning work to others, organizing the work of a group, deciding on work objectives, observing/checking others' work activities, recommending or making decisions about others such as hiring or promotion, etc.)

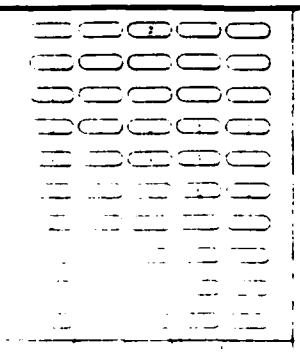
98. EVALUATING OTHERS--their performance, capabilities, accomplishments; based on direct observation, review or examination of work output, records and reports, etc. (Examples: high school teacher, drama critic, supervisor, parole officer, ship captain, head nurse, football scout, etc.)

99. BEING SUPERVISED--being told what to do and when, where, and how to do it; being watched/checked closely or regularly. (Examples: working in a factory, doing clerical work in an office, working behind a counter in a department store, etc.)

0. HELPING SUPERIORS PERFORM TASKS. (Examples: dialing a radio frequency for a pilot, giving/taking tools, working as a dental assistant, serving as a teacher's or general's aide, etc.)

01. COOPERATING--working with others to complete tasks or achieve goals. (Examples: working on a surgical team, aircrew, survey crew, electric power crew, movie production crew, staff committee; co-authoring a book or technical report; etc.)

02. LEADING GROUP DISCUSSIONS/MEETINGS. (Examples: giving everyone a chance to speak, questioning group members to clear up points made, reducing behaviors which get in the way of the group's purpose, summing up results to the group, etc.)



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F. INTERPERSONAL ACTIVITIES (CONTINUED)

	CHECK ✓ IF PART OF JOB	Keep ✓ Within Block	PART OF THE JOB RATE
203. ARGUING/DEBATING--disagreeing with words, with each side giving their reasons for or against; trying to prove a point by giving reasons. (Examples: trial lawyer, legislator, executive staff member, city council member, lobbyist, etc.)			
204. SETTLING CONFLICTS--between yourself and others, or as a third party helping others. (Examples: marriage or child custody counselor, claims adjuster, labor mediator, shop steward, elementary school teacher, etc.)			
205. BARGAINING--trying to arrive at mutual decisions/ agreements with others; usually involves discussion, give-and-take, compromise, etc. (Examples: negotiating wages or work schedules, making an out-of-court settlement, buying real estate, selling used goods, etc.)			
206. INFLUENCING/CONVINCING--getting others to think or act as you would like them to. (Examples: selling goods or services, preaching religious beliefs, convincing a jury, lobbying a state legislator, soliciting charitable contributions, etc.)			
207. COMMUNICATING--talking about work-related matters with others; discussing, conferring, informing, inquiring, explaining. (Examples: manager conferring with staff, reporter questioning a public figure, salesperson describing a product, supervisor explaining duties to workers, etc.)			
208. WAITING-ON/ATTENDING--taking care of the immediate needs, requests, or wishes of others. (Examples: serving customers, carrying someone's luggage, feeding a patient, showing someone to his/her seat, caddying, caring for the elderly, driving a cab, etc.)			
209. WORK-RELATED SOCIALIZING--participation in social activities connected with your job. (Examples: taking a customer/client to dinner, giving a party for workers, going to a charity dinner or award reception, etc.)			
210. DIVERTING/AMUSING--performing or arranging diversion/ entertainment for others. (Examples: magician, stunt driver, professional Santa Claus, social director, comic, tour guide, professional singer, etc.)			

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#2 PENCIL ONLY—PLEASE

F. INTERPERSONAL ACTIVITIES (CONTINUED)

CHECK ✓ IF PART OF JOB	PART OF THE JOB RATE
Keep ✓ within Block	1 - Extremely small 2 - Very small part 3 - Small part 4 - Fairly small part 5 - Moderate part 6 - Fairly large part 7 - Large part 8 - Very large part 9 - Extremely large

11. COUNSELING--helping others solve personal, emotional, organizational, financial, legal, or other problems; giving information, advice, and recommendations to guide/assist them. (Examples: school counselor, clergy member, management consultant, investment counselor, lawyer, tax consultant, psychologist, etc.)

12. TEACHING. (Examples: explaining ideas to a class, showing how a task is done, watching and correcting learner mistakes, etc.)

13. HEALTH TREATING/CARING--giving first aid, medical, or other health-related assistance to people. (Examples: dental or medical technician, doctor, nurse, physical therapist, etc.)

14. SELLING/MERCHANDISING--selling, renting, demonstrating goods or services; also, buying things for resale. (Examples: car or furniture salesperson, real estate or insurance agent, wholesale distributor, ad sales representative, store sales clerk, rental clerk, etc.)

15. LITIGATING/CONTRACTING--dealing with legal/contractual matters involving others. (Examples: representing legal clients, prosecuting defendants, drawing up legal contracts, etc.)

16. ENFORCING--making others obey laws, rules, policies, etc. (Examples: state-highway police officer, drill sergeant, game warden, football referee, department head, work-crew boss, etc.)

17. PROTECTING OTHERS--from injury or other physical harm. (Examples: life guard, safety inspector, ski patroller, bodyguard, school crossing guard, firefighter, police officer, etc.)

STOP

Have you finished checking the work elements in this section? If so, go back and rate the elements you have checked.

When you have rated all of the checked elements, read the instructions on page 34 before going on to Section G (Work Conditions).

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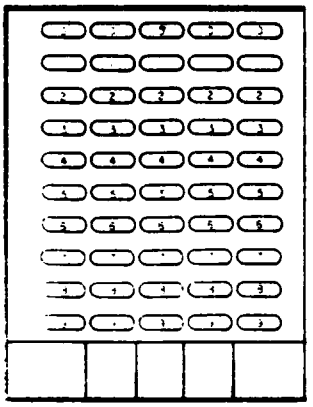

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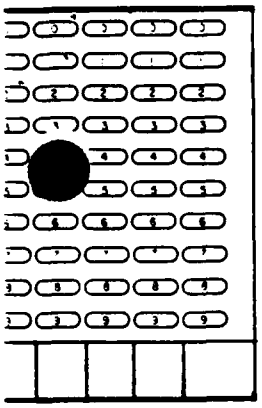


NEW INSTRUCTIONS

The rest of this questionaire deals with two kinds of work elements occurring
ı jobs: Work Conditions and Job Benefits/Opportunities.

You will be checking and rating these elements the same way as before. The
ıly difference will be in the rating scale you use.

First, check the elements that OCCUR in the job; then rate the EXTENT to which
ıe checked elements occur, using the following Extent-of-Occurrence scale:

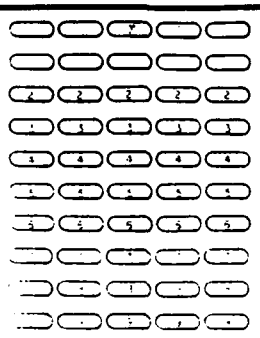
1 - An extremely small extent
2 - A very small extent
3 - A small extent
4 - A fairly small extent
5 - A moderate extent
6 - A fairly large extent
7 - A large extent
8 - A very large extent
9 - An extremely large extent

: making your extent ratings, consider and weigh these three factors:

(1) How often the element occurs.
(2) How much time the element occurs.
(3) The level at or degree to which the element occurs.

Taking those three factors into account, assign a rating to the element by
.ackening the appropriate numbered circle in the column to the right of the element.

:MEMBER: FIRST CHECK THE ELEMENTS THAT OCCUR IN THE JOB, THEN RATE EACH CHECKED ELEMENT.



1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

#2 PENCIL ONLY—PLEASE

G. WORK CONDITIONS

CHECK ✓ IF OCCURS IN JOB

Keep ✓ Within Block

EXTENT RATE

1 - Extremely small
2 - Very small extent
3 - Small extent
4 - Fairly small exten
5 - Moderate extent
6 - Fairly large exten
7 - Large extent
8 - Very large extent
9 - Extremely large

WHAT KINDS OF CONDITIONS OCCUR IN THE JOB?

218. INSIDE WORK. (Examples: office worker, school teacher, computer programmer, drafter, electronic assembler, etc.)

219. OUTSIDE WORK. (Examples: professional golfer or baseball player, farmer, roofer, surveyor, road repair worker, etc.)

220. BAD WEATHER CONDITIONS--high wind, rain, sleet, snow, etc. (Examples: emergency power line crew, mail carrier, fishing crew, snow removal crew, etc.)

221. EXTREME TEMPERATURES. (Examples: working near furnaces or forest fires, inside meat coolers, in and out of Turkish baths, in desert or artic conditions, etc.)

222. WET/HUMID CONDITIONS. (Examples: washing cars or windows, commercial fishing, underwater diving, fixing leaky pipes, etc.)

223. UNCLEAN CONDITIONS--grime, grease, dirt, dust, mud, filth, soot, etc. (Examples: grain elevator, garbage truck, auto garage/body shop, chicken farm, coal-crushing plant, etc.)

224. NOISE/VIBRATION. (Examples: chain saw, jack hammer, industrial equipment or machinery, loud music, bulldozer, etc.)

225. HIGH PLACES--with danger of falling; often involves climbing. (Examples: high ladders or scaffolds, power poles, trees, towers, building beams/ledges, etc.)

226. RISK OF INJURY OR ILLNESS (except high places). (Examples: machine dangers, burns, heavy dust, loud noise, poisonous gas or fumes, radiation, moving/falling objects, electric shock, explosions, etc.)

227. REQUIRED OR STANDARD DRESS. (Examples: business suit or dress, police or military uniform, waiter's uniform, etc.)

228. UNSTEADY EMPLOYMENT--where one can't count on constant employment or works only part of the year. (Examples: construction or contract work, entertainment, fruit or vegetable picking, landscaping, professional sports, etc.)

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

G. WORK CONDITIONS (CONTINUED)

	CHECK ✓ IF OCCURS IN JOB / Keep ✓ Within Block	EXTENT RATE 1 - Extremely small 2 - Very small extent 3 - Small extent 4 - Fairly small extent 5 - Moderate extent 6 - Fairly large extent 7 - Large extent 8 - Very large extent 9 - Extremely large
29. UNSTEADY WORK SCHEDULE--work hours vary from day to day or week to week. (Examples: delivering babies, selling life insurance, driving a long-haul truck, changing shifts, unexpected overtime, etc.)		
30. NIGHT WORK. (Examples: night shifts, night clubs, night-time emergencies, night driving or flying, etc.)		
31. FIXED WORK LOCATION--restriction to one work place. (Examples: barber, bank teller, ticket seller, toll collector, short-order cook, assembly-line worker, gate guard, desk clerk, computer operator, etc.)		
32. REGULATED/STANDARDIZED WORK--set methods/standards for what is done and how, when, and where it is done; often repetitive or routine. (Examples: assembly-line worker, keypunch operator, textile worker, mail sorter, elevator operator, etc.)		
33. CHANGING JOB REQUIREMENTS--new methods, techniques, equipment, skills, knowledge, etc. (Examples: scientist, surgeon, computer sales representative, design engineer, etc.)		
34. SERIOUS EFFECTS OF ERRORS--situations in which mistakes can cause injury/death of others, expensive equipment/ property damage, financial loss, or other major harm to organizations or individuals. (Examples: armored-car guard, train engineer, corporation president or treasurer, aircraft mechanic, nuclear reactor operator, securities trader, brain surgeon, defense lawyer, lifeguard, etc.)		
35. UNCOMFORTABLE HUMAN SITUATIONS--where people are angry, distressed, grief-stricken, hostile, overly aggressive or competitive, violent, hysterical, injured or dying, etc. (Examples: dealing with complaining customers, angry employees, arrest suspects, convicts, mobs, highly competitive/cutthroat co-workers, terminally ill patients, the emotionally disturbed, poverty stricken, etc.)		
36. TEAM WORK SITUATIONS--where interaction and cooperation with others is necessary to get the job done. (Examples: surveying crew, operating room team, aircrew, police patrol, rescue squad, research team, management team, etc.)		

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

G. WORK CONDITIONS (CONTINUED)

	CHECK ✓ IF OCCURS IN JOB	EXTENT RATE
237. ONE-TO-ONE PERSONAL CONTACT SITUATIONS--working/dealing with one person at a time. (Examples: cutting a customer's hair, counseling a client, advising a student, treating a patient, etc.)		
238. LIMITED PERSONAL CONTACT SITUATIONS--little or no chance for social interaction on the job. (Examples: driving a truck alone, guarding aircraft on the flight line or a building at night, plowing fields, patrolling a game preserve, etc.)		
239. AWAY FROM HOME--beyond the normal work day. (Examples: sales representative, state legislator, business executive, cross-country bus driver, commercial pilot, combat personnel, oil rig crew, etc.)		
240. SOCIAL DUTIES--expected participation in social activities, often beyond normal work hours. (Examples: receptions, charity dinners and other social events, entertaining out-of-town customers, dedicating a community building, etc.)		

-STOP-

Have you finished checking the work elements in this section? If so, go back and rate the elements you checked.

When you have rated all of the checked elements, go on to Section H (Job Benefits/Opportunities).

Keep ✓ Within Block

1 - Extremely small
2 - Very small extent
3 - Small extent
4 - Fairly small extent
5 - Moderate extent
6 - Fairly large extent
7 - Large extent
8 - Very large extent
9 - Extremely large

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

#2 PENCIL ONLY-PLEASE

H. JOB BENEFITS/OPPORTUNITIES

	CHECK ✓ IF OCCURS IN JOB — Keep ✓ Within Block	EXTENT — RATE
		1 - Extremely small 2 - Very small extent 3 - Small extent 4 - Fairly small extent 5 - Moderate extent 6 - Fairly large extent 7 - Large extent 8 - Very large extent 9 - Extremely large
HAT KINDS OF BENEFITS/OPPORTUNITIES ARE OFFERED/OCCUR IN THE JOB?		
41. GOOD PAY AND BENEFITS. (Examples: high salary/income, incentive pay or bonuses, a good retirement plan, a medical care plan, financial aid for education, etc.)		
42. COMFORTABLE, SAFE WORK SETTING. (Examples: a clean, quiet, attractive work place; comfortable temperatures; low risk of physical harm; enough work space, etc.)		
43. DEPENDABLE EMPLOYMENT--steady, dependable work; a job you can count on. (Examples: working throughout the whole year without layoffs, having a job from year to year despite poor economic conditions, etc.)		
44. DIFFERENT WORK SETTINGS--chance to work in different locations, instead of the same place all the time. (Examples: highway patrol officer, traveling sales representative, cross-country truck driver, personnel recruiter, telephone repairer, park ranger, newspaper reporter, etc.)		
45. DIFFERENT WORK ACTIVITIES--doing different kinds of activities, rather than the same thing all the time. (Examples: investigating crimes, working on different kinds of equipment in different locations, directing a summer camp, treating patients in an emergency room, etc.)		
46. ADVENTURE--new and exciting experiences, sometimes involving risk. (Examples: fighter pilot, movie stunt performer, crew member on an Air Force bomber or Navy destroyer, circus performer, captain of a charter fishing boat, oceanographer, expedition supervisor, smoke jumper, etc.)		
47. FREEDOM FROM ANXIETY/PRESSURE--absence of excessive psychological stress. (Examples: absence of pressing deadlines or rush work; conflicting or unexpected work demands; constant conflict, competition, or other unpleasant contact with others; constant threat, uncertainty, or danger; etc.)		
48. CONSIDERATE MANAGEMENT--working in an organization whose management cares about its employees. (Examples: respect and appreciation for employees; policies and benefits favorable to employees; genuine concern for individuals; fairness in promotions, raises, transfers, etc.; avoidance of layoffs; etc.)		

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

H. JOB BENEFITS/OPPORTUNITIES (CONTINUED)

	CHECK ✓ IF OCCURS IN JOB	Keep ✓ Within Block	EXTENT RATE
249. INDEPENDENT PERSONAL LIFE--work that does not interfere with your personal, family life or leisure activities. (Examples: a job that does not require overtime, extended out-of-town assignments, weekend work, homework, social obligations, irregular hours, night work, being "on call," frequent moves, etc.)			
250. GOOD FUTURE--assurance of secure, financially rewarding, and respected employment throughout one's working life. (Examples: banker, career military or federal personnel, doctor or dentist, certified public accountant, chemical engineer, etc.)			
251. KNOWLEDGE OF THE WORK SITUATION--being kept informed of what is going on in your work unit or organization. (Examples: information about new policies, decisions, changes, etc.)			
252. HAVING A SAY--chance to take part in the decisions that affect your work and your unit/organization (department, office, business, etc.) (Examples: company executive, business partner, management consultant, research director, restaurant manager, department head, etc.)			
253. FREEDOM OF ACTION--doing things your own way, without close direction/control from others; planning, scheduling, and completing work on your own. (Examples: company president, free-lance writer, artist, clinical psychologist, clergy member, osteopath, realtor, etc.)			
254. WORKING FOR YOURSELF--being self-employed instead of working for an organization or someone else. (Examples: small business owner, tax consultant, fishing boat captain-owner, landscaper, chiropractor, optometrist, farmer, roofing contractor, etc.)			
255. KNOWLEDGE OF PERFORMANCE--frequent information about how well you are doing your job, either from other people or from the job itself. (Examples: comments from supervisors, correct/incorrect output from a computer, sale/no-sale of a product or service, audience reaction, patient recovery, properly/improperly running engine, smooth/rough aircraft landing, etc.)			
256. ACKNOWLEDGEMENT/APPRECIATION--having good work noted by your unit/organization. (Examples: letter of commendation, superior performance award, selection as employee of the year, etc.)			

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

H. JOB BENEFITS/OPPORTUNITIES (CONTINUED)

	CHECK ✓ IF OCCURS IN JOB / Keep ✓ Within Block	EXTENT RATE
		1 - Extremely small 2 - Very small extent 3 - Small extent 4 - Fairly small extent 5 - Moderate extent 6 - Fairly large extent 7 - Large extent 8 - Very large extent 9 - Extremely large
7. JOB PRESTIGE--social position or respect given a person solely because of the job held. (Examples: doctor, lawyer, clergy member, college president, airline pilot, commander, congressional respresentative, etc.)		
8. OCCUPATIONAL VISIBILITY--chance to be known beyond your organization as an outstanding/important person within your occupation. (Examples: authoring journal articles or books; giving professional lectures/speeches; holding offices in professional or trade organizations; having your accomplishments publicized in trade journals, magazines, newspapers, TV, etc.; receiving professional awards; etc.)		
9. PLEASANT SOCIAL CONTACT--chance for friendly relationships with others through your work. (Examples: working closely with people, making friends at work, meeting interesting people, etc.)		
0. CHANCE TO HELP OTHERS. (Examples: caring for patients, advising/counseling students, helping welfare clients, helping people find jobs, etc.)		
1. CHANCE TO LEAD--to organize/direct the work of others. (Examples: assigning work to others, organizing the work of a group, deciding on work objectives, observing and evaluating job performance, making decisions about promotions, etc.)		
'. CHANCE TO GET AHEAD--to be promoted or advanced to higher levels, usually because of good performance or experience in one's present job. (Examples: promotion to supervisor or department head, promotion in military grade, appointment as company vice president, advancement to a more responsible position, etc.)		
3. IMPORTANT WORK--feeling that what you do matters; that it is important and meaningful; that it is significant to your organization, other people, or society. (Examples: screening airline passengers for weapons, conducting car safety tests, saving accident victims, maintaining/repairing aircraft, doing cancer research, making important organizational decisions, etc.)		

1. Check (✓) the conditions which occur in the job. If a condition does not occur in the job - Don't check it.

2. In the "Extent" column, rate the extent to which checked conditions occur in the job. If you checked it - Rate it.

H. JOB BENEFITS/OPPORTUNITIES (CONTINUED)

CHECK ✓ IF OCCURS IN JOB	EXTENT RATE
Keep ✓ Within Block	1 - Extremely small 2 - Very small extent 3 - Small extent 4 - Fairly small extent 5 - Moderate extent 6 - Fairly large extent 7 - Large extent 8 - Very large extent 9 - Extremely large

264. ACCOMPLISHMENT--setting and successfully accomplishing work tasks/goals over which you have control, seeing your efforts produce results, seeing an entire job through to the finish, etc. (Examples: completing a research report, selling a big insurance policy, successfully defending a client, closing a business deal, solving a production problem, etc.)

265. RESPONSIBILITY--being required to make important decisions and take actions for which you are accountable; often such decisions/actions affect people, property, money, or the success of your organization. (Examples: air traffic controller, nuclear reactor operator, corporation president or treasurer, military commander, etc.)

266. CHALLENGING WORK--work that challenges your abilities and takes full advantage of your experience, education, and training. (Examples: newspaper editor, judge, solar engineer, meteorologist, university professor, professional athlete, researcher, etc.)

267. PERSONAL GROWTH--chance to learn new things which expand/develop your skills, knowledge, and capabilities. (Examples: new tasks and duties, training programs, workshops, college courses, close contact with knowledgeable people, valuable work experience, etc.)

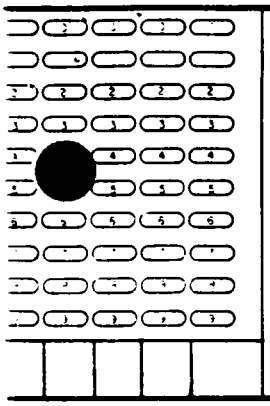
268. CHANCE TO BE ORIGINAL--to come up with new ideas, approaches, products, creations, etc,; to use your own ideas. (Examples: developing an advertising campaign, inventing a scientific instrument, writing articles for a magazine, designing a building, creating a piece of art, designing a research project, etc.)

-STOP-

Have you finished checking the work elements in this section? If so, go back and rate the elements you checked.

When you have rated all of the checked elements, you will have completed this work inventory. THANK YOU for your help.

Please make any comments about completing this inventory on the optional evaluation form that follows. Please turn the completed inventory in to your CBPO Occupational Survey Control Officer.



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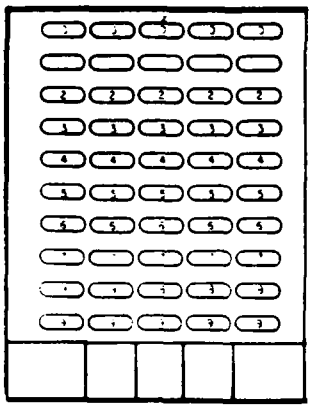

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COMMENTS

(Continue on back of page, if necessary.)

DO NOT INCLUDE CLASSIFIED INFORMATION

DAFSC: _____. Time to complete: _____ minutes.

I. Instructions

II. Rating Scales

III. Work Elements

A. Sensory Requirements:

B. Information Elements:

C. General Mental Requirements:

D. General Physical Requirements:

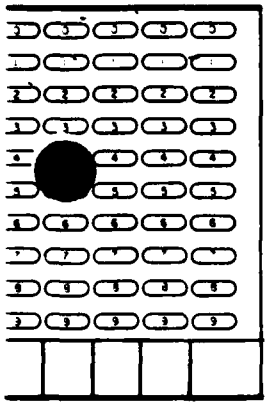
E. Physical Activities:

F. Interpersonal Activities:

G. Work Conditions:

H. Job Benefits/Opportunities:

IV. Suggested Improvements



APPENDIX B

Table 1

General Work Inventory Survey Sample by First two Digits of Air Force Specialty Code

AFSC	Title	Total	%Sample
11	Aircrew Operations	57	2.66
12	Aircrew Protection	23	1.07
22	Geodetic	15	.70
23	Audiovisual	58	2.71
24	Safety	26	1.21
25	Weather	25	1.17
27	Command Control Systems Operations	61	2.85
29	Communications Operations	23	1.07
30	Communication-Electronics Systems	109	5.09
31	Missile Electronic Maintenance	74	3.46
32	Avionic Systems	145	6.77
34	Training Devices	82	3.83
36	Wire Communications Systems	71	3.32
39	Maintenance Management Systems	27	1.26
40	Intricate Equipment Maintenance	21	.98
42	Aircraft Systems Maintenance	120	5.60
43	Aircraft Maintenance	69	3.22
44	Missile Maintenance	60	2.80
46	Munitions and Weapons Maintenance	49	2.29

Table 1 (cont)

AFSC	Title	Total	%Sample
47	Vehicle Maintenance	76	3.55
51	Computer Systems	25	1.17
54	Mechanical/Electrical	60	2.80
55	Structural/Pavements	78	3.64
56	Sanitation	21	.98
57	Fire Protection	26	1.21
59	Marine	8	.37
60	Transportation	73	3.41
61	Services	37	1.73
62	Food Services	22	1.03
63	Fuels	25	1.17
64	Supply	59	2.76
65	Contracting	23	1.07
66	Logistics	11	.51
67	Accounting and Finance, Auditing	25	1.17
69	Management Analysis	28	1.31
70	Administration	68	3.18
73	Personnel	34	1.59
74	Morale, Welfare, and Recreation	23	1.07
75	Education and Training	40	1.87
79	Public Affairs	25	1.17
81	Security Police	44	2.06
87	Band	43	2.01

Table 1 (cont)

AFSC	Title	Total	%Sample
90	Medical	62	2.90
91	Medical	51	2.38
92	Medical	14	.65
98	Dental	24	1.12
	Other	1	.05

APPENDIX C

Table 2

General Work Inventory Survey Sample by Full Air Force Specialty Code Except Prefix and Skill-Level[1]

AFSC	Title	Total	5-Level	7-Level	%Sample
112X0	Inflight Refueling	14	8	6	.65
113X0B	Flight Engineer (Helicopter Qualified)	10	7	3	.47
113X0C	Flight Engineer (Performance Qualified)	17	4	13	.79
114X0	Aircraft Loadmaster	8	5	3	.37
115X0	Pararescue/Recovery	8	5	3	.37
121X0	Survival Training	9	7	2	.42
122X0	Aircrew Life Support	14	1	13	.65
222X0	Geodetic	15	5	10	.70
231X0	Audiovisual Media	11	9	2	.51
231X1	Audiovisual Graphics	12	9	3	.56
231X2	Still Photographic	22	11	11	1.03
232X0	Audiovisual Production Documentation	13	9	4	.61
241X0	Safety	13	-	13	.61
242X0	Disaster Preparedness	13	11	2	.61
251X0	Weather	25	5	20	1.17
271X1	Airfield Management	12	10	2	.56
272X2	Operations Systems Management	11	9	2	.51
272X0	Air Traffic Control	12	11	1	.56
	Systems	13	-	13	.61
275X0	Tactical Air Command and Control	13	12	1	.61

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
276X0	Aerospace Control and Warning				
293X3	Ground Radio Operator	11	10	1	.51
294X0 11670[2]	Airborne Communications Systems	12	1	11	.56
302X0	Weather Equipment	13	12	1	.61
303X1	Air Traffic Control Radar	13	13	-	.61
303X2	AC&W Radar	9	9	-	.42
)3X3	Auto Tracking Radar	15	13	2	.70
304X0	Wide Band Communications Equipment	11	9	2	.51
304X1	Navigation Aids Equipment	11	-	11	.51
304X4	Ground Radio Communications	9	8	1	.42
304X6	Space Communications Systems Equipment Operator	12	10	2	.56
305X4	Electronic Component and Swg Systems	15	-	15	.70
316X0G	Missile Systems Analyst (WS-133AM/ CDB,WS-133A/M,WS-133B/CDB)	13	1	12	.61
316X0T	Missile Systems Analyst (AGM-69A)	13	9	4	.61
316X2F	Missile Electronic Equipment (LGM-25)	14	13	1	.65
316X2G	Missile Electronic Equipment (WS-133A, WS-133A/M, WS-133B)	9	6	3	.42
316X2T	Missile Electronic Equipment (AGM-69A)	12	11	1	.56

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
316X3	Instrumentation Mechanic	13	10	3	.61
321X1G	Defense FCS Mechanic (B-52D/F/G(MD-9,ASG-15 Turrets))	14	10	4	.65
321X2A	Weapon Control Systems Mechanic (F-106A/B(MA-1, ASQ-25))	15	15	-	.70
321X2Q	Weapon Control Systems Mechanic (F-4E(APQ-120))	13	9	4	.61
324X0	Precision Measuring Equipment	12	11	1	.56
325X0	Automatic Flight Control System	1	1	-	.05
325X1	Avionics Instrument System	10	-	10	.47
326X4A	Instrument Avionics Computerized Test S&N and Comp (F/FB-111)	15	14	1	.70
328X0	Avionic Communications	15	8	7	.70
328X1	Avionic Navigation Systems	12	9	3	.56
328X2	Airborne Warning and Control Radar	14	12	2	.65
328X3	Electronic Warfare Systems	13	-	13	.61
328X4	Avionic Inertial and Radar Navigation Systems	11	7	4	.61
341X2	Defense System Trainer Devices	13	10	3	.61
341X3 341X4[2]	Flight Simulator	15	10	5	.70
341X4	Flight Simulator	27	10	17	1.26
341X5 341X6[2]	Navigational/Tactical Training Devices	15	12	3	.70
341X6	Navigational/Tactical Training Devices	11	9	2	.51

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
361X0	Cable and Antenna System Installation/Maintenance	12	11	1	.56
361X1	Cable Splicing Installation/ Maintenance	14	10	4	.65
362X1	Telephone Control Office Switching Equipment, Electrical/Electrome-chanical	8	6	2	.37
362X3	Missile Control Communication System	15	13	2	.70
362X4	Telephone Equipment Installation and Repair	22	9	13	1.03
391X0A 391X0[2]	Maintenance System Analysis	14	10	4	.65
392X0	Maintenance Scheduling	13	-	13	.61
404X0	Precision Imagery and Audiovisual Media Maintenance	12	10	2	.56
404X1	Aerospace Photographic Systems	9	-	9	.42
423X1	Aircraft Environmental Systems	13	1	12	.61
423X2	Aircrew Egress Systems	12	8	4	.56
423X3	Aircraft Fuel Systems	9	8	1	.42
4[illegible]X2	Jet Engine Mechanic	13	8	5	.61
426X3	Turboprop Propulsion	7	-	7	.33
427X0	Machinist	12	8	4	.56
427X1	Corrosion Control	15	14	1	.70
427X2	Nondestructive Inspection	12	11	1	.56
427X3	Fabrication and Parachute	14	14	-	.65
427X4	Metals Processing	13	10	3	.61

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
431X0C	Artic Rotor (CH/HH-3, CH/HH-53, HH/UH-60)	9	7	2	.42
431X0D	Semirigid Rotor (HH-1H, UH-H/P/N)	10	9	1	.47
431X1	Tactical Aircraft Maintenance	26	10	16	1.21
431X2	Strategic Aircraft Maintenance	1	-	1	.05
431X2C 43153A[2]	Airlift Aircraft Maintenance	10	8	2	.47
431X2E	Strategic Aircraft Maintenance (C/KC-135, VC-137, KC-10, E-3,E-4)	13	12	1	.61
443X0E	Missile Maintenance (LGM-25)	15	2	13	.70
443X0G	Missile Maintenance (WS 133-A/M WS-133B)	8	6	2	.51
445X0E	Missile Facilities (LGM-25, Ops)	7	4	3	.33
445X0F	Missile Facilities (LGM-25, Maint)	8	8	-	.37
445X0G	Missile Facilities (WS-133B, WS-133A/M)	11	6	5	.51
445X1	Missile Liquid Propellant System Maintenance	11	10	1	.51
461X0	Munitions Systems	12	9	3	.56
462X0	Aircraft Armament Systems	24	7	17	1.12
464X0	Explosive Ordinance Disposal	13	9	4	.61
472X0	Base Vehicle Equipment Mechanic	11	11	-	.51
472X1	Special Vehicle Mechanic	3	-	3	.14
472X1A	Special Vehicle Mechanic (Firetrucks)	10	10	-	.47
472X1D	Special Vehicle Mechanic (Towing and Servicing Vehicles)	11	11	-	.51
472X2	General Purpose Vehicle Mechanic	11	11	-	.51

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
472X3	Vehicle Body Mechanic	13	12	1	.61
472X4	Vehicle Maintenance Control and Analysis	15	1[3]	14	.70
472X5	General Purpose Vehicle and Body Maintenance	2	-	2	.09
511X0	Computer Operations	13	-	13	.61
511X1	Computer Programming	12	11	1	.56
542X0	Electrician	13	8	5	.61
542X1	Electric Power Lines	12	10	2	.56
542X2	Electrical Power Production	12	11	1	.56
545X0	Refrigeration and Cryogenics	12	1	11	.56
545X2	Heating Systems	11	11	-	.51
551X0	Pavements Maintenance	10	-	10	.47
551X1	Construction Equipment	10	-	10	.47
552X0	Carpentry	10	10	-	.47
552X1	Masonry	5	5	-	.23
552X3	Structural	2	-	2	.09
552X4	Protective Coating	12	10	2	.56
552X5	Plumbing	13	9	4	.61
553X0	Engineering Assistant	14	13	1	.65
555X0	Production Control	2	1[3]	1	.09
566X0	Pest Management	12	10	2	.56
566X1	Environmental Support	9	-	9	.42
571X0	Fire Protection	26	9	17	1.21

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
591X0	Seaman	8	6	2	.37
602X0	Passenger and Household Goods	9	9	-	.42
602X1	Freight Traffic	12	11	1	.56
602X2	Packaging	12	10	2	.56
602X3	Traffic Management	3	3	-	.14
603X0	Vehicle Operations	13	-	13	.61
605X0	Air Passenger	12	11	1	.56
605X1	Air Cargo	11	10	1	.51
605X2	Air Transportation	1	-	1	.05
611X0	Services	23	9	14	1.07
612X0	Meatcutter	7	3	4	.33
612X1	Subsistence Operations	7	7	-	.33
622X0	Food Services	12	1	11	.56
622X1 622X0[2]	Food Services	10	6	4	.47
631X0	Fuels	25	10	15	1.17
645X0	Inventory Management	23	8	15	1.07
645X0A	Inventory Management (Munitions)	14	12	2	.65
645X1	Material Facilities	11	6	5	.51
645X2	Supply Systems	11	10	1	.51
651X0	Contracting	23	9	14	1.07
661X0	Logistics Plans	11	-	11	.51
672X2	Financial Services	12	11	1	.56

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
672X3	Financial Management	13	-	13	.61
691X0	Cost and Management Analysis	28	11	17	1.31
701X0	Chapel Management	14	14	-	.65
702X0A	Administration Management	13	10	3	.61
702X0B	Staff Support Administration	1	1	-	.05
702X0C	Unit/Orderly Room Administration	13	12	1	.61
703X0	Reprographics	14	-	14	.65
705X0	Legal Services	13	11	2	.61
732X0	Personnel	12	9	3	.56
732X1	Personal Affairs	14	-	14	.65
734X0B	Drug/Alcohol Abuse Control	8	-	8	.37
741X1	Recreation Services	12	-	12	.56
742X0	Open Mess Management	11	9	2	.51
751X0	Education	11	7	4	.51
751X2	Training	1	-	1	.05
751X3	Instructional Systems	15	-	15	.70
753X0	Combat Arms Training and Maintenance	13	1	12	.61
791X0	Public Affairs	25	8	17	1.17
811X0	Security	22	8	14	1.03
811X2	Law Enforcement	12	8	4	.56
811X2A	Law Enforcement (Military Working Dog Qualified)	10	6	4	.47
871X0A	Instrumentalist (Clarinet)	11	11	-	.51

Table 2 (cont)

AFSC	Title	Total	5-Level	7-Level	%Sample
871X0B	Instrumentalist (Saxophone)	10	9	1	.47
871X0E	Instrumentalist (Flute/Piccolo)	1	1	-	.05
871X0G	Instrumentalist (Cornet/Trumpet)	8	8	-	.37
872X0	Instrumentalist	13	-	13	.61
902X0C	Medical Service (Aeromedical)	12	7	5	.56
902X2	Surgical Service	11	9	2	.51
903X0	Radiology	13	1	12	.61
905X0	Pharmacy	13	13	-	.61
908X0	Environmental Medicine	13	11	2	.61
911X0	Aerospace Physiology	14	13	1	.65
913X0	Physical Therapy	13	13	-	.61
914X0	Mental Health Clinic	12	10	2	.56
915X0	Medical Material	12	11	1	.56
924X0	Medical Lab	14	-	14	.65
981X0	Dental	11	-	11	.51
982X0	Dental Lab	13	8	5	.61
	Other	3	2	1	.14

[1]A "X" in the AFSC designates a 5- or 7- skill level. Five-skill level respondents are considered specialists in their AFSCs, while 7-skill level respondents are considered technicians or supervisors in their AFSCs.

[2]The second AFSC designated for this group is a renaming of the previous AFSC listed.

[3]The respondent listed under this 5-skill level reported having a 3-skill level.